PAPER TRADE JOURNAL

JUNE 13, 1940

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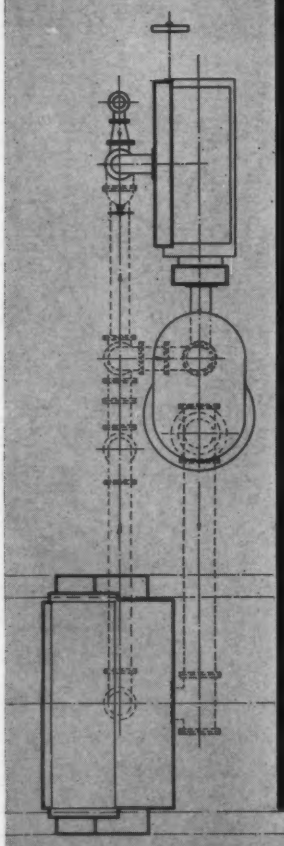

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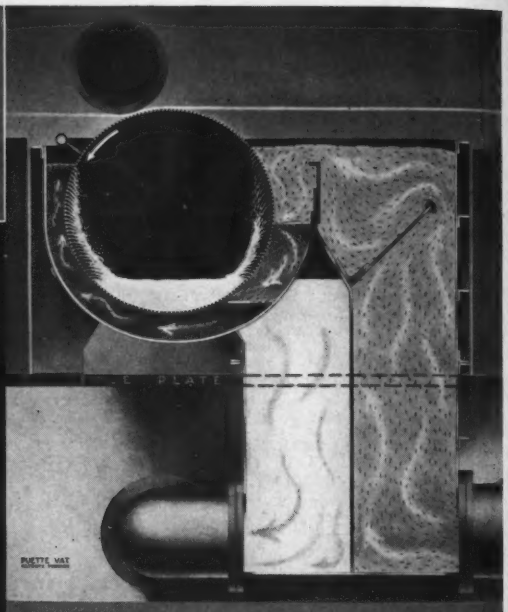
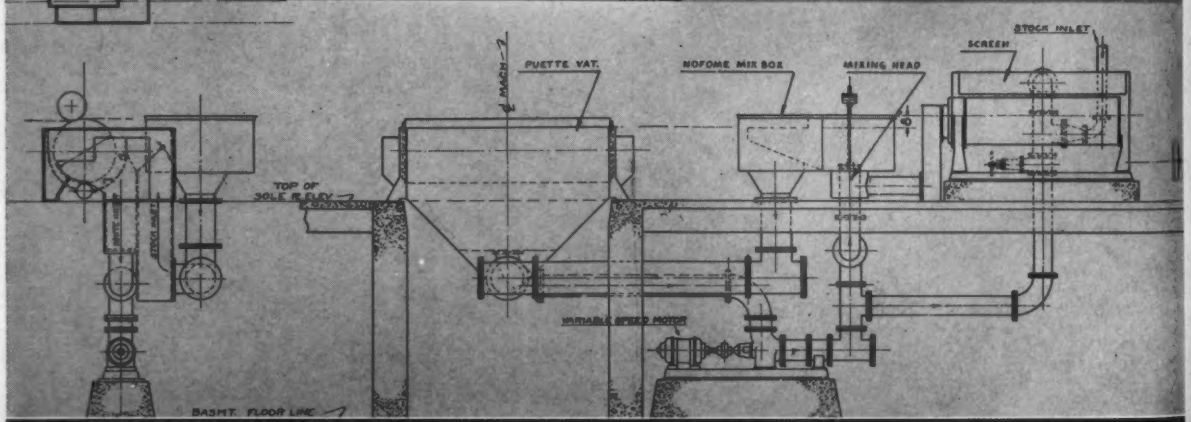


Illustration above shows the unique operating principle of the Downingtown Puette Vat, while the diagram below and at left shows an Ideal Piping and Screen Layout for the Puette Vat System. Large size reproductions of both, together with a complete description, sent on request.



DOWNINGTOWN MANUFACTURING COMPANY, DOWNINGTOWN, PA.

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CONTENTS

JUNE 13, 1940

	PAGE
Paper Chemistry Institute Awards Degrees	7
George W. Mead Honored	7
Trend of Chicago Market Strongly Upward	8
McCabe Appointed to Defense Commission	9
Hammermill Brings Out Whippet Bond	9
Canadian Forest Workers To Go Overseas	10
To Make Sodium Sulphate	10
Paper Board Production Increases	10
Program for Superintendents Convention	11
New Potdevin Bag Press	12
Why Not Training?	13
L. D. Smiley with Nick F. Helmers, Inc.	14
M. & O. Reforesting Test Succeeds	14
Bert Blake Goes With Millar	14
The Skinner Chip Packing Process	15
Government Paper Bids	15
New Literature	16
E. DeVries Opens N. Y. Office	16
May Save Davis Paper Co.	16
E. F. McIntyre Goes With Dexter Sulphite	18
New Flow Meter	18
Construction News	20
Financial News	22
Editorial	24
Production Ratio Report	25
Imports of Paper	39
Latest Market Review	42
Miscellaneous Markets	44
Market Quotations	44
Classified Advertising	48

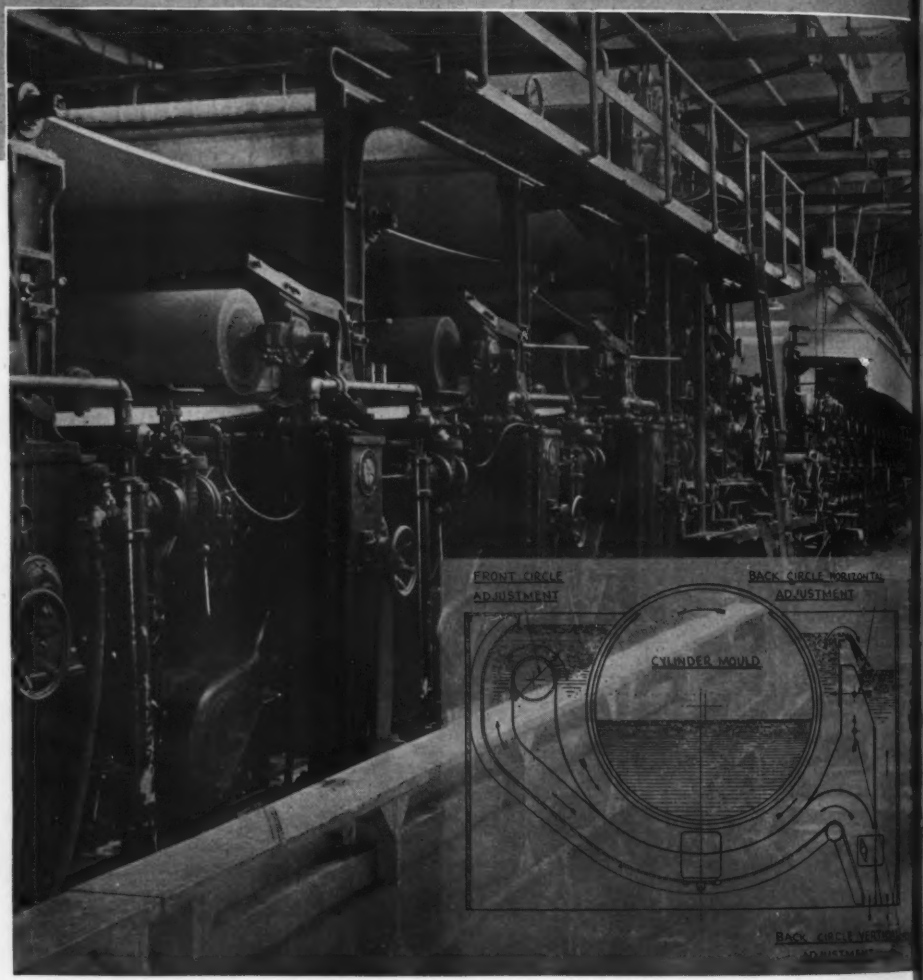
Technical Section *("TAPPI")*

Velo Cold Set Process in Printing and Its Relationship to Paper	27
Kalamazoo TAPPI Meets	29
Effects of the Wettability of Paper Coating Raw Stock	30
The Flocculation and Dispersion of Papermaking Fibers	33

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 58

12 Stream Flow Vat Systems in operation and on order . . . . .



Listed below are the twelve Puseyjones Stream Flow Vat Systems in operation and on order:

Four 48" x 134" units making tags and other high-grade Boards. Already in operation . . . See illustration at right.

One 60" x 150" unit making Chestnut .009" Corrugating Board. This is already shipped and due to start operating in the near future.

Four 48" x 124" units to make a large variety of Boards from Southern Pulp. These will be shipped shortly.

Three 48" x 90" units to make high-grade Kraft and Rope Specialties. These are now under construction.

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Paper Chemistry Institute Awards Degrees

Thirteen Doctor of Philosophy and Eleven Master of Science Degrees Awarded By Institute of Paper Chemistry At Commencement Exercises—List of Degrees—George W. Mead Is Honored.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 10, 1940—Thirteen doctor of philosophy and 11 master of science degrees were awarded Monday morning, June 10, by the Institute of Paper Chemistry, Appleton, Wis., at Lawrence College commencement exercises in Memorial Chapel.

Those awarded doctor degrees and the titles of their theses:

Carl Edward Ahlm, Minneapolis, Minn., "An Investigation of Thiolignin"; Henry Allison, Jr., Charlotte, N. C., "The Relations Between Surface Activity and Fiber Bond Strength in a Papermaking Pulp"; Raymond E. Baker, Salem, Ind., "Factors Governing the Strength Development of Kraft Pulps"; Paul Clay Baldwin, Tully, N. Y., "The Application of Photomicrographic Techniques to Problems of the Pulp and Paper Industry"; John William Bard, Antigo, Wis., "The Effect of Tannins on the Pulping of Wood and the Bleaching of Pulps"; John Calvin Bletzinger, Pittsburgh, Pa., "The Effect of Hydroxl Groups of Cellulose on its Papermaking Properties"; Loren Verne Forman, Ames, Iowa, "The Action of Ultraviolet Light on Lignin".

Karl Wilhelm Emil Fries, Dixfield, Maine, "Electrokinetic Phenomena of Aqueous Clay Suspensions"; Ralph Edwin Glading, Lorain, O., "The Ultraviolet Absorption Spectra of Lignin and related Compounds"; Harold Howard Houtz, Niagara Falls, N. Y., "The Colloidal Differentiation of Starches"; Gerald Gale Johnston, Dahinda, Ill., "The Mechanism Involved in The Methylation of Cellulose Acetate and of Cellulose Dissolved in Trimethylbenzyl Ammonium Hydroxide,"; Leslie Lundgren Larson, Black Foot, Idaho, "A Study of the Lignin Residues in Unbleached and Partially Bleached Sulfite Pulp"; Herbert William Rowe, Dayton, Ind., "A Fundamental Study of the Nature of Fibert Staining by Iodin Stains."

Master of Science Degrees Awarded

Master of science degrees were awarded to Alan Patrick Adrian, Appleton, Wis.; William Hamblen Aiken, Salado, Tex.; Kenneth Alan Arnold, Syracuse, N. Y.; Joseph Edward Atchison, Elk Garden, West Virginia; Cyril Delevanti, Jr., Houston, Texas; Pasquale Anthony Forni, Lee, Mass.; Charles Edwin Gardner, Jackson, Wis.; William Glen Hulbert, Jr., Everett, Wash.; George William Ingle, Lynbrook, N. Y.; William Hugh Lane, Marshall, Texas; Willard Allan Schenck, Worden, Montana.

George W. Mead Honored

Two hundred friends and neighbors of George W. Mead, president of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., and Israel P. Witter, president of the First National Bank of Wisconsin Rapids, paid tribute to them early last week at a testimonial dinner at Hotel Witter. The dinner was sponsored by the Wisconsin Rapids Community Club, in recognition of the 40 years of their leadership in the city's industrial and social life.

John Roberts acted as toastmaster and was introduced by Norbert J. Daly, president of the club. Mr. Roberts in turn presented Theodore W. Brazeau, prominent Wisconsin Rapids attorney-at-law and a schoolmate of Messrs. Mead and Witter at the University of Wisconsin. Their association has endured since then.

The two guests of honor were presented with plaques, each with the same words engraved under the names of the recipient:

"In appreciation of the community service and civic leadership to our city and vicinity—1940."

"Citizens are valuable in a community only if they take pride in the interests of that community independent of their personal profit," Mr. Brazeau, as he called his onetime schoolmates "citizens of the highest order." He declared that the history of the city is almost inseparably associated with the two.

He called Messrs. Mead and Witter "prime movers" in the organization of the Consolidated Water Power and Paper Company in 1904, and said that the years since have seen the city forge ahead under the stimulus of their industrial leadership.

Mr. Brazeau cited the growth of Wisconsin Rapids and stressed its advantages as a city in which to reside, linking the honored guests with most of their aspects. Among the enterprises fathered by the two he listed Consolidated, Ahdawagam Paper Products Company, the Wisconsin Valley Creamery, Johnson-Hills, the First National Bank and the Mead-Witter

(Continued on page 46)

Trend of Chicago Market Strongly Upward

All Grades of Paper Very Firm and Expected To Reflect Growing Scarcity of Pulp Soon—Waste Paper Market Shows Increased Strength — Chicago Paper Association Revived — Unemployment Act Amended.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 10, 1940—The strong upward trend in paper markets, locally is expected about June 15 when all grades of paper are expected to follow the leadership of the raw materials markets. Sulphites, in particular, are considered as likely to reflect the scarcity of pulp. Demand continues good in virtually all lines and the near proximity of higher prices seems to have stirred many buyers into a more active state of mind. Kraft papers, already considerably above normal levels, are reported to continue very strong. Groundwoods and newsprints are very firm with orders reported as good and mills running at a very fair rate of production. Books and covers seemed to have taken up all "market slack" and have advanced to a stronger position. The board market likewise shows a great deal of strength and additional stimulus from the comparatively strong building boom throughout the country. Waste papers show increased strength with envelope cuttings reporting some advance, krafts at very firm figures and shavings running along at a less buoyant pace. White ledgers are stronger. Old book stock still lag with book mills consuming a large reserve stock which was in evidence at the beginning of the recent upward rise.

Chicago Paper Association Revived

The Chicago Paper Association, once one of the most important of Chicago's trade organizations and for some years defunct has recently been revived under well known and aggressive leadership. The revival has been motivated, according to local reports, by the apparent need for cooperative action and for a free dissemination of experience in meeting present day problems arising from events both at home and abroad. The wrapping paper merchants who are sponsoring the revival, plan to hold two meetings a month together with an annual meeting in the Fall. Thus the officers now elected, are to serve only until that period when the entire membership may ballot on the personnel to guide them through the first complete year. President of the Association is Henry Borchardt of the Pilcher-Hamilton Company, well known locally and a prominent factor in the old Chicago Paper Association. Other officers are as follows: vice president, Robert Levison, Eagle Wrapping Products Company; second vice president, S. S. Weil of Joseph Weil & Sons; secretary-treasurer, William J. Shapland, Fred Rentz Paper Company. W. M. Chukerman, a past president of the Chicago Paper Association and member of the firm of J. Chukerman & Sons, is to be a member of the Board as is G. H. Stedham of the Schwarz Paper Company and H. E. Weinstein of the Western Bag and Paper Company. Honorary members of the Board are Albert Steindler of the Inlander-Steindler Paper Company and Louis Levin of Levin Bros. Paper Company.

Paper and Twine Club Plan Outing

With Earl Beier of Beier & Company leading the way as president, the Paper and Twine Club is sighting its guns on its annual confab to take place at the Breakers Hotel, Sandusky, O. on June 21, 22 and 23. The Chicago paper executive reports that invitations have been issued to member and non-member paper merchants in Michigan, Illinois, Wisconsin, Indiana, Ohio, Kentucky, Western Virginia and even parts of Western Pennsylvania to insure a record attendance at the three day session. While a two day golf tournament is a part of the program, the Paper and Twine Club likewise plans to stick pretty close to business. A jobbers meeting will be held the morning of June 21 at which time Robert Zeigler, assistant secretary of the National Paper Trade Association, will present the Certification Plan of the N.P.T.A. On the evening of the same day the club will hold its annual dinner with D. C. Everest, past president of the American Pulp and Paper Association, speaking on international matters as they effect the paper industry in this country. The annual meeting and election of officers will be held on the following morning, the golf tournament will be completed that afternoon and prizes awarded at an evening session.

State Amends Insurance Act

The Illinois Legislature's special session adjourned this week without inflicting any new taxes on Illinois business. The only item of any special interest to the local paper industry dealt with passage of amendments to the Illinois Unemployment Insurance Act which bring the State law into conformity with the Federal Act with respect to the $3000 limitation as to salary computation and with respect to the wages paid basis of reporting. Passage of the Act meant a net savings to Illinois employers of approximately $10,000,000 inasmuch as no salaries over $3000 need to be computed for assessment of the 3 per cent payroll tax.

Salesmen's Association Adds Members

Four well known paper sales executives are recent acquisitions to the Salesmen's Association of the Paper Industry. These four, representing the western division which headquarters in Chicago are F. R. Kettle of the Allied Paper Mills; Fred Chaplin of the Champion Paper & Fibre Company; David Brittain of the Mead Sales Company and T. S. Hodgson, of the Union Bag & Paper Corporation.

John Swigart Heads Committee

John Swigart, veteran paper jobber and head of the Swigart Paper Company has again been appointed chairman of the Paper and Envelope Committee of the Chicago Association of Commerce, a committee which deals with taxation, legislative and other matters of direct interest to the paper and envelope industry. Serving with him on the Committee will be J. M. Abell of the Butler Paper Company; R. E. Jones of the Hobart Paper Company; J. O. Lee of the Great Lakes Paper Company; A. R. Martin of Bradner Smith & Company and C. C. Sherman of the Smith Paper Company.

McCabe Appointed to Defense Commission

National Defense Advisory Commission Announces Appointment of Thomas B. McCabe, President of Scott Paper Co., As Assistant To E. R. Stettinius In Charge of Raw Materials — Smythe Co. Host At Outing.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., June 10, 1940—The National Defense Advisory Commission announced this past week the appointment of Thomas B. McCabe, president of the Scott Paper Company of Chester, Pa., as assistant to Edward R. Stettinius, in charge of raw materials.

Mr. McCabe is also chairman of the board of directors of the Federal Reserve Bank of Philadelphia

THOMAS B. MCCABE

and was recently appointed a member of the Business Advisory Council for the U. S. Department of Commerce.

The new local member of the National Defense Advisory Commission received his early education at Wilmington Conference Academy in Dover, Delaware, and graduated from Swarthmore College with a degree of A.B. in 1915. He has been a member of the Board of Managers of Swarthmore College since October, 1938.

His business career dates from 1916 when he became a clerk in the Sales Department of the Scott Paper Company and he has continued his connection with that Company since then with the exception of a period during the World War when he enlisted as a private in the United States Army and arose to the rank of captain.

Smythe Co. Host at Outing

On Saturday last the J. L. N. Smythe Company, as has been its custom since 1923, was host to all its employes at the annual picnic held each year at "Town's End", the home of Mr. and Mrs. L. A. Martin, of Glassboro, both of whom previous to their marriage were employes of the J. L. N. Smythe Company.

The schedule of events included a baseball game between the "Finers" and "Wrappers." The score was 10 to 4 with the "Finers" as victors.

The program of events also included: rolling pin throwing contest for the ladies; wheelbarrow race for men; mixed putting contest; bag race for men; bag race for ladies; mixed three-legged race; shoe race for men; cross country race for men under 40; tug-of-war and bag test.

Hammermill Brings Out Whippet Bond

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 10, 1940—The Hammermill Paper Company has brought out a new product, Whippet Bond, a sulphite unwatermarked sheet. The company has been conducting a "teaser" campaign including four small cards, showing a "fast running" whippet race, mailed at intervals, followed by a larger card, also illustrated with whippets, telling its receivers to "Watch for Broadside!" The final coup of the campaign was sent by Carter Rice & Co., Corporation, to their customers today. The broadside describes the manufacture and advantages of Whippet Bond.

The Hammermill Company gives a pencil to each member of the printing trade to whom the cards are sent, and also a button lapel in the shape of a whippet to the salesmen of the printing companies, which they wore during the campaign.

The Carter Rice Company has at its office an elaborate announcement sales easel, profusely illustrated, containing a description of Whippet Bond, "a new companion line of mill quality unwatermarked bond paper." It is described as a "fast running" product for large volume in the field of low priced bond papers. The announcement contains an illustrated description of the Hammermill plants at Erie, Pa., and Hoquiam, Wash., including laboratories, samples of the air-seal wrapper and air-tight shipping protection. The announcement includes pictures of testing the paper in a print shop, swatches of colored paper, a swatch of white and 11 colors, and samples of quotation and delivery certificates. There is also a pocket with sheets of white Whippet Bond, 11 x 17.

Messinger Paper Co. Appointed Agent

The Messinger Paper Company of Chicago, Ill., has been appointed an agent for the four new papers recently announced by the L. L. Brown Paper Company, Adams, Mass. These papers are: Forward Linen Ledger and Forward Bond, made from 100 per cent new rag cuttings; and Escort Ledger and Machine Posting and Escort Bond, produced from 50 per cent of that raw material. The Messinger Paper Company, which has been a leading distributor of L. L. Brown papers for many years, has a complete stock of the new lines and is supplying its trade with attractive sample books and advertising folders relating to them.

Canadian Forest Workers To Go Overseas

Authority Granted For Recruiting Four Forestry Companies For Service Overseas Where Valuable Work Was Rendered By Woodsmen In Former Conflict — Market For Wood Flour — Higher Wage Scale Approved.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 10, 1940—During the last world conflict forestry men from Canada did invaluable work for the Allies in France and Great Britain. Now from Ottawa comes the news that another important extension of Canada's present help overseas has been provided for in a plan giving authority for the recruiting of four forestry companies and four railway construction companies for overseas service. This will make a total of nearly 2,000 men.

Market for Wood Flour

While the war every day emphasizes the important part Canada is playing in providing the extra supplies of newsprint and wood pulp needed to replace supplies cut off from Scandinavia, opportunities are opening up for supplies of wood products in which Canada has not hitherto figured to any marked extent. An example is provided in a communication from G. R. Heasman, Canadian trade commissioner at London, who states that as Scandinavia is no longer a reliable source of supply for wood flour, there is an opportunity to market that product in the United Kingdom. While no statistics are available as regards this trade, Mr. Heasman states that "With serious curtailment in the imports of timber, it is feared that even domestic supplies of wood flour may be seriously affected." Several users fearing a possible shortage in the future have indicated interest and a desire to examine samples and obtain prices.

In the past, importers have complained about Canadian quality and price and the fact that delivery from Canada could not be made as frequently as delivery from Scandinavia. Under present conditions it is possible that importers will not be so particular as to quality and price, and delivery is not likely to be so good from Scandinavia as from Canada, he reports.

Higher Wages for Bushmen

The Quebec government has announced establishment by order-in-council of a new pay scale for forestry workers fixing minimum monthly wages of $52 for experienced employees and $35 for apprentices, aged or partially crippled employees. The order, affecting about 55,000 forestry workers throughout the province, sets the maximum work week at 60 hours.

To Make Sodium Sulphate

Construction of a large plant for production of anhydrous sodium sulphate, at Dale Lake, Cal., is now being rushed to completion by the Desert Chemical Company. An analysis of markets for this product is being made, which will determine the extent of 1941 production. Contemplated for 1941 is 50,000 tons, but this can be increased materially should conditions warrant. Approximately five thousand tons will be available for sample shipments by the middle of July this year.

Methods for the production of sodium sulphate at Desert Chemical Company's properties has been under test for several years, and have been successfully proven on a commercial basis. The company is amply financed for large-scale production, with the board of directors representing important Pacific Coast business interests.

Construction started late in 1939 is now being rapidly completed. This program includes installation of a large power plant, housing accommodations and increased vat and pipe line capacity. Many wells have been drilled and vats built, under the preliminary development program. Ample water for full production has been shown by a seven-year study of the available supply.

Forty-four test wells drilled on 500 acres of the company property indicate more than 13,000,000 tons of sodium sulphate in that limited area. Test wells over the balance of the property are the basis of estimates that between twenty and thirty million tons are available.

Analyses of the sodium sulphate are uniformly 99.5 per cent pure or higher, with less than five-hundredths of one per cent insoluble. The product is iron free, non-hygroscopic and large in structure, so that it can be supplied in any screen required.

In addition to the sodium sulphate and salt cake marketed by Desert Chemical, a by-product is sodium chloride of high purity.

S. Lee Richardson is president and production manager of the company, and other officers include vice-president, George Pepperdine, head of the Pepperdine Foundation; vice-president, M. Christenson; secretary, Henry D. Dargert, an official of Floatations, Inc., and Bardco Company; treasurer C. P. Shattuck; and director, James Q. Henry, president of Pacific Coast Elevator Company.

Executive offices of Desert Chemical Company are at 4031 Goodwin Avenue, Los Angeles, Cal.

Paper Board Production Increases

WASHINGTON, June 12, 1940—Production of paperboard of 0.012 of an inch or more in thickness during the first four months of this year was 1,655,353 short tons compared with 1,456,757 tons produced in the like 1939 period, the Department of Commerce reported. During the four months of this year mills operated at an average of 0.7 per cent of capacity against 68 per cent last year. New orders received this year were for 1,639,066 tons against orders for 1,457,558 tons in the four months of 1939.

Paper board production in April was 417,566 short tons against 406,922 tons in March and 372,984 tons in April last year, the department said. During April mills operated at 70.9 per cent capacity against 69.1 per cent in March and 69.1 per cent in April last year, while unfilled orders at the ends of the three months, respectively, were 166,830 tons; 110,039 tons, and 97,340 tons.

Program for Superintendents' Convention

Netherland Plaza Hotel, Cincinnati, Ohio, June 18-20, 1940

Tuesday, June 18

11:00 A. M. OPENING SESSION
President Howard H. Harrison presiding

12:20 P. M. LUNCHEON
Toastmaster—F. L. Zellers
Government movie film "Know Your Money"—U. S. Secret Service Dept.

2:00 P. M. GENERAL SESSION
President Howard H. Harrison presiding
"Paper Behavior in the Mill"—V. L. Shaw, President, Perfecting Service Corporation, Chicago.
"The Equipment for Storage and Distribution of Liquid Alum in the Paper Mill"—E. V. White, consulting engineer, Cincinnati, Ohio.
"Surface Active Chemicals: Their Behavior and Practical Application"—Dr. J. H. Shipp, head of Fine Chemicals Research, E. I. du Pont de Nemours & Co., Wilmington, Del.

8:30 P. M. River Boat Trip to Coney Island Park—Robert R. Weber, representative of the Mathieson Alkali Works, Inc. at Cincinnati will be in charge.

Wednesday, June 19

9:30 A. M. NEWSPRINT AND WRAPPING MEETING
Chairman—R. W. Haddock, Escanaba Paper Company, Escanaba, Mich.
"Manufacture of Newsprint on High Speed Machines"—H. C. Cram, Appleton, Wis.
"Southern Kraft Papers"—Earl L. Hobaugh, Crossett Paper Mills, Crossett, Ark.
"Automatic pH Control at the Machine"—A. L. Chaplin, Leeds & Northrup Company, Philadelphia, Pa.

9:30 A. M. CHEMICAL PULP MEETING
Chairman—Luther C. H. Beighey, Hammermill Paper Company, Erie, Pa.
"Importance of pH and Catalysts in Bleachery Operations"—John D. Rue, Hooker Electrochemical Company, Niagara Falls, N. Y.
"Chipper Knives"—C. P. Robinson, Heppenstall Company, Pittsburgh, Pa.
"The Use of Stainless Steel Alloys in the Manufacture of Sulphite Pulp"—G. C. Kiefer, Allegheny Ludlum Steel Corporation, Brackenridge, Pa.

9:30 A. M. COATED PAPER MEETING
Chairman—Edward T. A. Coughlin, Bryant Paper Company, Kalamazoo, Mich.
"Carbonate in Coated Papers"—H. F. Roderick, technical director, Michigan Alkali Company, Wyandotte, Mich.
"Facts About Coating"—Frank W. Egan, John Waldron Company, New Brunswick, N. J.
"Dry Blending and Mixing of Materials"—E. M. Rupp, National Engineering Company, Chicago, Ill.

9:30 A. M. BOARD MEETING
Chairman—H. F. Bennett, the Gardner Richardson Company, Lockland, Ohio.
"What Has Brought About the Recent Interest in Bacteria in Board"—Harry C. Fisher, the Gardner Richardson Company, Lockland, Ohio.
"Effects of Proper Humidity with Regard to Printing and Scoring of Board"—Walter E. Sooy, the Gardner Richardson Company, Middletown, Ohio.

9:30 A. M. POWER AND PLANT ENGINEERS MEETING
Chairman—Merton S. Fogerty, Michigan Paper Company, Plainwell, Mich.
"Boiler and Paper Machine Controls"—Alfred Wenzel, Republic Flow Meters Company, Chicago, Ill.
Motion picture of actual boiler furnace operation with explanation of various features—Otto de Lorenzi, Combustion Engineering Company, New York.

9:30 A. M. TISSUE MEETING
President Howard Harrison will be host. Walter Johnson of Hoberg Paper Mills, will serve as discussion leader.
This group will be the guest of the Crystal Tissue Company and includes a trip through their mill at Excello, Ohio, followed by informal round table discussion in the assembly room at the mill.

9:30 A. M. FINE PAPER MEETING
Chairman—O. P. Gephart, Miamisburg Paper Company, Miamisburg, Ohio, also chairman of the Miami Valley Division, will preside.
A discussion on the more recent developments of printing fine papers will be given by Ronald I. Drake of the Champion Paper and Fibre Company, Hamilton, Ohio, and will lead up to a round table discussion of the subject.

9:30 A. M. FINISHING, STORING AND SHIPPING MEETING
Chairman—William J. Reigers, Beckett Paper Co., Hamilton, Ohio.
"Air Conditioning of Finishing Room from a Practical Angle"—J. Linville Mullin, Hopper Paper Company, Taylorville, Ill.
"Paper Sorting Machine"—W. S. Reed, Dexter Folder Company, Pearl River, N. Y. This paper will reveal data of recent demonstrations held in an Eastern and Mid-western fine paper mills.

"Handling of Paper Broke"—a further discussion on this topic which was cut short for lack of time at the Washington Convention last year.

All of the above meetings will be held in Private Meeting Rooms on the fourth floor, entrance to which will be through the North Exhibit Hall.

AFTERNOON Golf—M. L. Barker, Beckett Paper Company, Hamilton, Ohio—Chairman.
Skeet—E. C. Jacobi—Chairman

7:30 P. M. Dinner and Entertainment

Thursday, June 20

MORNING Exhibits

12:20 P. M. Toastmaster—William Beckett, Beckett Paper Company, Hamilton, Ohio.
Address—E. W. Tinker, executive secretary, American Paper and Pulp Association, New York City.

2:00 P. M. GENERAL SESSION
President Howard H. Harrison presiding
Association Meeting and Election of Officers
"Application of Research in Industry"—Everett S. Lee, manager, General Laboratory of General Electric Company, Schenectady, N. Y.
"Recent Developments in Pulp and Paper Mill Water Purification"—F. J. Lammers, International Filter Company, Chicago, Ill.

7:30 P. M. BANQUET AND DANCE
Toastmaster—Allan Hyer, Black-Clawson Company, Hamilton, Ohio.
Address—"Business and Government"—George H. Mead, The Mead Corporation, Chillicothe, Ohio.

General Sessions on Tuesday and Thursday will be held in Parlors A-B-C-D—fourth floor, opposite North Exhibit Hall.

Golf Tournament and Trap Shoot

The Hamilton County Golf Club, formerly known as Maketewah Club, will be used for our tournament. This club is located on Reading Road—U. S. Route 25-42—north of Cincinnati and of easy access by auto or bus.

It is suggested that those who will form foursomes notify M. L. Barker, chairman, at the Beckett Paper Co., Hamilton, Ohio, at once so he can schedule entry time and thus prevent delay in starting.

Trap and Skeet Shoot will be held at Queen City Gun Club on U. S. Route 50—East, near Watson Airport. Howard Stansell, West Carrollton Parchment Company, will assist E. C. Jacobi.

LADIES' PROGRAM

Tuesday, June 18

10:30 A. M. Busses leave for trip about city including: Rookwood Pottery, Luncheon at Mariemont Inn, Conservatory of Flowers, Taft Museum.

EVENING Boat trip on Ohio River

Wednesday, June 19

MORNING Sightseeing and shopping
Ladies' Golf

AFTERNOON Visit to Proctor & Gamble "Crisco" plant

EVENING Joint dinner and entertainment.

Thursday, June 20

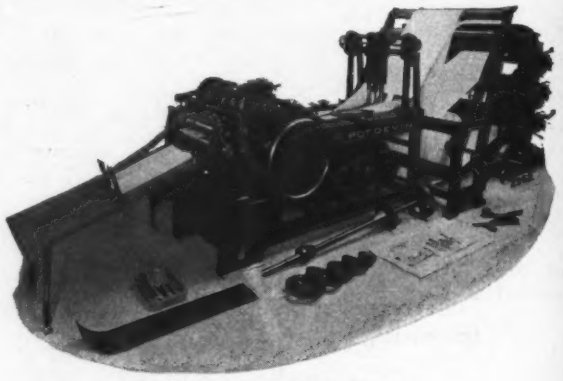
MORNING Sightseeing and shopping

1:00 P. M. Luncheon in Netherland Plaza Restaurant Continentale
Bridge tournament

EVENING Banquet and dance in Hall of Mirrors

New Potdevin Bag Press

The Potdevin Machine Company, manufacturer of paper bag machines, printing presses, and other converting equipment, 1223 38th street, Brooklyn, N. Y., announces a new combination flour bag tuber and multi-color, multi-length aniline web press. This arrangement permits flour and meal sack manufacturers to print the front and rear faces, both side panels, the butt and make the tube, all in one operation. Potdevin states that many hours of time are saved by this method, as well as several handling operations.



NEW ANILINE WEB PRESS

The plates used for aniline printing are rubber and therefore, leave no plate cuts or impression marks on the corrugated flour bag paper.

The tuber represented in the illustration above is equipped with adjustable formers, ruled former table, corrugating rollers, bell counter, thumb notch cutter, motor and Reeves drive.

Withdraw Claim Against Mount Holly

Addison M. Bowman, referee in bankruptcy, has given notice that Guy H. Davies and Annie H. Davies, his wife, have withdrawn their petition for allowance of $915.00 for storage of machinery, against the Mount Holly Paper Company, Mount Holly Springs, Pa., and have also withdrawn the agreement entered into by them with the trustee for the division of machinery.

A meeting for the purpose of making a division of the machinery in accordance with the opinion of the Circuit Court of Appeals will be held before the referee on Wednesday, June 26, 1940 at 9 A. M., EST., 10 A. M., DST., at Carlisle, Pa.

Arthur V. Howland Re-elected Treasurer

BOSTON, Mass., June 10, 1940—Arthur V. Howland, vice-president and assistant treasurer of Tileston & Hollingsworth Company, has been re-elected treasurer of the Advertising Club of Boston, and has been appointed chairman of the finance committee of that organization.

Why Not Training?

By O. J. Naughton

In a new mill built some years ago, where most of the machine help was native, promotions were rapid. It was the policy of the company to fill the higher positions in the organization by promotions from within the company, rather than to bring in outside men, and to omit "boomers" wherever possible. There were, of course, some present and among them was a boss machine tender who has since risen to the top of his game.

These rapid promotions, lack of experience, mishandling of equipment and frequent accidents, had a marked effect on production. After the coming of this boss machine tender, who was a former captain in the army, a man of keen intelligence, long experience and pleasant personality, though a strict disciplinarian, a change became apparent. The improvement in the personnel was so noticeable through his efforts to teach and demonstrate, that the company decided to utilize the experience of this man in a practical manner by establishing classes to instruct all its employees to more efficiently perform their individual duties.

Increasing Efficiency and Safety

This man who was selected to teach other workers, outlined the paper machine in its entirety, beginning at the winder, for peculiar to this trade the beginner is in charge of the finished product, and followed through to the Fourdrinier. He described the equipment of the several sections of the machine, explained why each step was essential and what was accomplished. A blackboard was used to display diagrams to illustrate the subjects being discussed. The guiding principles, traction, and arc of contact, were thoroughly explained. Personal safety of the operators was considered of primary importance and this was instilled into the minds of the workers. The safety habit thus acquired was enduring.

The result of these classes of instruction was a thorough understanding by each man of the details of his particular job, a decrease in accidents and increased production. As the chief objective at the start of this instruction course was to bridge the gap between minimum and maximum production, rather than to help the men alone, the classes were discontinued when that result had been achieved.

I have often wondered why a training system similar to that described, but more comprehensive and less elementary, and including cost of operation as well as efficiency, would not be of general benefit to all concerned.

In the past, operating superintendents have frequently opposed any form of training that would put operators on an equal footing with them in knowledge of operation. Many have regarded themselves as "dealers in secrets." But with technical control upon them, many, particularly the old timers, feel that a "Frankenstein" had been created to destroy them, for they have been compelled to recognize the fact that cooperation with others in the execution of their duties, is of greater benefit to final results, than the exploitation of their own personal ability.

Many are now in doubt whether or not all these secrets of the game were in their keeping. In the older mills, where the operators were advanced under one superintendent, his ideas and methods were accepted, right or wrong. But judging from the radical change in management and operating policy in many of these mills, in all sections of the country, in the last three years, many of them were wrong. A superintendent of a large Canadian mill, once told me, that to promote a machine tender in his mill, the estimated to cost was $12,000 to make him a thoroughly capable and skillful operator. I know this to be true. For on modern high speed machines, every minute of operating time is worth $4.25, so that any delay through an error of judgment or lack of experience on the part of the operator is indeed costly.

Railroads do not promote a worker until he has proven his ability to handle equipment, through study, and examinations before his superiors. This assured safety, eliminates the costly process of "breaking in" and gives self confidence to the operator, thus promoted.

This method, or a similar one, if adopted in all mills, as a part of the trade, would be very helpful to the men, and a substantial saving to the companies. It would standardize many methods through facts established technically, that are at present chiefly guess work among the operating personnel, and in a majority of the mills, from the superintendent down.

Proper Handling of Press Rolls

Let us consider such vital things as the proper and skillful handling of press rolls, in relations to maximum felt life, water removal and steam consumption. How many superintendents learn this at a vast expense to the concern for which they work? I have seen this proven in the case of a junior superintendent, a few years ago, on a wide, fast machine, equipped with suction presses, top and bottom rolls of rubber. Yet we had no felt life, 12 to 13 days for a first felt or around 2500 miles, and 40 days for a second felt, 8500 to 9000 miles. Excessive weight, far past the maximum water removal point, was still so great that the heads on the first press bottom roll collapsed twice in less than six months. It took 72 hours to replace each head.

Proper Attention Adds to Felt Life

Then under another superintendent, from a mill of the more progressive type, we saw the same make of felts run on the same presses, with the top rolls recrowned, nip pressure reduced, felts kept clean and open, averaged 35 to 40 days at the first press and over 100 days at the second press. One going 124 days for a grand average of over 800 F. P. M. or 27,000 miles. That was the difference between guess work and facts.

Now, on fast machines, with production being pushed to the limit to reduce cost, many experiments are being tried. Operators are rarely taken into confidence, though often the success or failure rests

with them; still if they make some notes of their own, they are regarded as a "chisler," rather than one who is interested in his job.

Mills Should Encourage Able Workers

Although this condition is general, it is more noticeable where one goes from mill to mill. Almost invariably where mills attempt to speed up production, and cut down cost, department heads are selected from a more progressive mill, thus proving that they have been lax in developing their own talent by not keeping abreast with new methods and ideas. Many men have the ambition and ability to learn and progress and can do so if encouraged, as well in one mill as another.

L. D. Smiley with Nick F. Helmers, Inc.

L. D. Smiley is now in charge of the paper mill construction division for Nick F. Helmers, Inc., 15 Moore street, and has been associated with the pulp and paper industry for the past twenty-nine years. He started in pulp mill construction at Sault Sioux St. Marie, Ont., and was chief electrician for the H. E. Talbott Company, Dayton, Ohio, who built the mill for the Lake Superior Paper Company, which is now the Abitibi Company. George F. Hardy was consulting engineer.

During the world war he was in charge of Power, Maintenence, and Construction for the Signal Corps, U. S. Army, McCook Field, Dayton, Ohio.

For several years Mr. Smiley was connected with the Management Engineering and Development Company, Paper Mill Engineers, Dayton, Ohio, and was in charge of the construction division.

All the mills Mr. Smiley constructed included foundations, structures, equipment foundations, piping, electrical work, and complete installation of all equipment. Among the important works which Mr. Smiley supervised are the following:

Spanish River Pulp and Paper Company mills at Espanola and Sturgeon Falls, Ont.

Mead Corporation mills at Chillicothe, Ohio, Kingsport, Tenn., and Lynchburg, Va.

Fraser Paper Company mills at Madawaska, Me., and Edmundston, N. B.

L. D. Smiley

Provincial Paper Company, Port Arthur, Ont.

Ft. William Paper Company, Ft. William, Ont.

Murray Bay Paper Company, Murray Bay, Que.

Harriman Paper Company, Harriman, Tenn.

Mr. Smiley is familiar with the various types of pulp and paper mills, as he has constructed sulphite, sulphate, soda, ground wood, and semi-chemical. The paper mills which he constructed manufactured newsprint, bond, book, waxing, catalogue, bag, test liner, and corrugating paper. Mr. Smiley is familiar with all the various processes for the manufacture of pulp and papers.

M. & O. Reforesting Test Succeeds

International Falls, Minn., June 10, 1940—Reforestation of cutover lands apparently is highly practicable, Minnesota & Ontario Paper company officials declared in reviewing results of a four-year experimental planting program which will now be placed on a commercial basis.

The firm, co-operating with technicians of the federal and state forestry divisions, planted a total of 216,000 coniferous tree seedlings in the four years.

The "plantations" are on a former lumber camp site south of Littlefork and on an area formerly used for lumber storage adjacent to International Falls.

Three varieties of pine—white, red and jack—and white spruce, were planted on the 55-acre tract adjoining the city. The seedlings totalled 65,000.

Camp 5, the plantation south of Littlefork, was made a reforestation project in the spring of 1936. Additional plantings were made in 1938 and this year, until the total acreage involved is 161.

Already the company, one of the state's leading producers of paper and insulation material, has plans for harvesting the yield from the plantations as the trees mature.

Jack pine reaches a merchantable size in about 40 years, while spruce and other varieties of pine require from 60 to 100 years to reach maturity. Additional plantings are scheduled each year.

Government forestry experts are watching these reforestation endeavors with great interest and already see possibilities of solving thereby the problems which confront the "distressed" cutover counties of northern Minnesota.

High taxes on lands during their non-productive periods are yet to be overcome, they indicate.

Company officials are vitally interested in the success of the experiments because they see therein the assurance of a permanent supply of pulpwood and also are concerned with the conservation aspect.

Bert Blake Goes With Millar

It is announced that the affairs of the Blake-Butler Paper Company are being wound up and that B. T. Blake has joined Geo. W. Millar & Co., Inc. Hayward Beatty, head of the fine paper department of Millar, advises that Mr. Blake will be in charge of book sales as manager of the book paper department.

With the large Blake-Butler business on book papers come also the fine lines of Crocker Burbank and Louis DeJonge. The addition of the handsome business on book paper brought to Millar by Bert Blake to this companies rapidly expanding fine paper business, indicates the consistent growth of one of New York's leading houses under the virile leadership of President James F. Levens.

The Skinner Chip Packing Process

The Skinner Chip Packing Process, Patent No. 2,198,587 developed at Marathon Paper Mills Company, Rothschild, Wis., involves an entirely new principle in the chemical pulping industry, being that of segmentary packing of chips in the digesters. Not only does this process give increased pulp production per unit, but the manner in which the chips are placed in the digester assures positive natural circulation without the aid of forced circulation. However, the full effectiveness of forced circulation will be completely realized only when chip packing is used in conjunction with it.

Placed in Three Distinct Piles

In regular operation of this equipment, the chips are placed in three distinct piles inside the digester—with loose packing veins between each pile running from the center to the lining. These veins divide the mass of chips into three equal piles from bottom to top and act as circulation channels for free movement of the circulating medium. By establishing equal and positive circulation areas throughout the digester, dead spots are entirely eliminated (except in extreme cases) and higher yields with low screenings are the natural results, provided, of course, correct penetration and cooking procedure is followed.

Ordinary chip filling, or the use of chip packers which strive for a leveling of the chips usually have very uneven packing. Loose packing and hard packing of chips may take place anywhere in the digester, but seldom in any direct line of circulation. In other words, circulation follows the course of least resistance and under conditions such as mentioned, might zig-zag the length and breadth of the digester without reaching the hard packed areas until actual cooking begins, and then it is too late.

Chip Flow Governs Amount of Chips Charged

The rate of chip flow in the distributing equipment governs the amount of chips charged. If the chips run slow the packing is very hard and, of course, reversed if the chips run fast. With very few exceptions, the chip flow is most irregular, and hard and lose packing takes place throughout the entire charge, hindering the circulation and doing other things which are known and quite obvious. However, with the segmentary process of chip packing, regardless of chip flow, the loose packing veins are always present to take care of natural circulation.

This equipment is designed to take care of maximum chip flow under ordinary moisture conditions. Consequently the filling time is increased only in proportion to the additional wood substance used and usually minor operating alterations may be made to make up this time. Some chip packers on the market increase the filling time as much as three or four times, which is lost time, resulting in considerable decrease in production.

High velocity steam nozzles used on this equipment not only act as distributing mediums but equalize the moisture content of the chips. The original chip temperature is raised an average of 8° F. which aids considerably in penetration and recovery of steam used in filling. Penetration is slower with very dry wood, owing to the presence of air in the cells. By steaming, this air is replaced by steam and while condensing creates a partial vacuum, drawing in the cooking liquor for a better and more thorough penetration.

Does Not Require Any Power

This equipment does not require any power to operate. It is easily handled by one operator, and requires less than a minute to place in operation. It is designed and fabricated to fit any size digester with the same effectiveness.

Over a period of three years' operation at Marathon Paper Mills Company, this process has consistently averaged more than 10 per cent increased production. Sulphur, limestone, and steam consumption per ton have decreased the same amount. Percentage of screenings are slightly lower. Pulp quality has been improved because each digester is filled in the same manner and condition, allowing more uniformity in cooking. Every condition of wood has been used during this period without the least trouble and with the best of results. Green or wet wood will pack harder than the drier wood, and naturally will raise the increased production per digester.

Ideal for Sulphate Process

This process is ideal for sulphate because the chip filling time is not increased. One sulphate mill has been using this process for three months and reports production increase of 12 per cent to 14 per cent with the same savings on steam. The chemical saving is not as great because they have increased same to compensate for additional wood in the digester. However, by doing this, their screenings have actually been cut in half. Pulp quality has been improved.

This process is fully covered by patent and may be used successfully and effectively in any branch of the chemical pulp industry. Enormous savings are possible by correctly packing the digester.

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 12, 1940—Government Printing Office has received the following bids for 5,000 sheets of 24 x 36 brown cloth lined paper: Whitaker Paper Company, $120.19 per M sheets; Mudge Paper Company, $120.18; Mathers-Lamm Paper Company, $134.00; Middlesex Products Company, $113.00; Nashua Gummed and Coated Paper Company, $125.00 less 2 per cent; Barton, Duer & Koch Paper Company, $120.60; Graham Paper Company, $125.60; and R. P. Andrews Paper Company, $124.20.

For 320,000 pounds of 24 x 36 newsprint paper 32 diameter; National Pulp & Paper Company, 2.65 cents; and Paper Corp. of U. S., 3.7 cents.

For 65,000 pounds (2,000,000 sheets) of 21 x 32 white sulphite manifold paper; Import Paper Company, 8.5 cents less 2 per cent; Whitaker Paper Company, 8.34 cents; Old Dominion Paper Company, 8.797 cents; R. P. Andrews Paper Company, 8.5 cents; Marquette Paper Company, 8.04 cents; Barton, Duer & Koch Paper Company, 8.33 cents; and Graham Paper Company, 8.1 cents.

New Literature

Detergent activity is discussed in a booklet issued by the Rohm & Haas Company, 22 Washington square, Philadelphia, Pa. This is a study with special reference to the company's synthetic detergent, "Triton 720", developed by research to give maximum scouring and cleansing properties.

Lace leather is the subject of a folder issued by J. E. Rhoads & Sons, 35 North Sixth street, Philadelphia, Pa. It gives directions for lacing belts and information about the company's "Tannate" belt lace.

Valves and high pressure steam cleaners are described in two folders issued by the Homestead Valve Manufacturing Company, Corapolis, Pa. Installations of valves in the paper and other industries are shown. The folder on the company's Hypressure Jenny cleaner shows typical applications of this compact steam cleaner equipment.

Hand and motor winches are described in Bulletin 340, issued by the Stephens-Adamson Manufacturing Company, Aurora, Ill. Specifications of hand, speed reducer and motor winches are given, with applications of typical hand operated and motor winches.

Working of S.A.E. Nickel Alloy Steels, issued by the International Nickel Company, 67 Wall street, New York, is a 16-page reprint from the *American Machinist*. The article gives data, compiled from practice, of 34 leading fabricators. It covers effects of alloying elements, characteristics, heat treatment and practical instructions.

Torque indicators are described in Catalogue No. 40-T, and wrenches in Catalogue No. 240, issued by the Blackhawk Manufacturing Company, Milwaukee, Five models of "Torkflash" torque indicators, for drawing up a bolt, or a series of bolts, to proper tension, are included.

The large line of Blackhawk wrenches, including nugget sockets, regular socket, special and open-end wrenches are described and list prices given.

Yarway expansion joints of wrought steel, are described in Bulletin J-E 1907, issued by the Yarnall-Waring Company, Chestnut Hill, Philadelphia, Pa. The outstanding feature of the Yarway "Gun-Pakt" expansion joint, is the use of a fixed gland ring with special attachments by which the packing may be forced into the stuffing box while the joint is under pressure.

In Bulletin T-1735, the Yarway impulse steam trap is described. This devise is of small size, light weight and of low cost. It is easily installed, standard and gives high efficiency with low maintenance cost.

E. De Vries Opens U. S. Office

E. De Vries, a well known paper distributor and manufacturer of Amsterdam, Holland, has transferred his offices to this country and may be temporarily reached at the New Weston Hotel, 34 E. 50th street, New York. Permanent offices will be opened as soon as possible and the business here will be carried on under the style of the De Vries Paper Company.

Mr. De Vries was on one of his frequent business trips to this country when the trouble broke out in Holland and the disorganized condition of that country now caused him to take steps to transfer his business to the United States.

Mr. De Vries, among other important connections, is president of the Hollandsche Papier Industrie of Amsterdam and is also president of N. V. Papierfabriek Noord-Brabant, which is owned by the world renowned Philips Company. He furnished by far the larger portion of the roofing paper used in Holland. Mr. De Vries also operated a factory making wrapping paper and a factory making envelopes and has represented the American Writing Paper Corporation of Holyoke, Mass. and the Scott Paper Company of Chester, Pa. He has branch

E. De Vries

offices all over the world, but principally in the Far East, South America and South Africa. Although he has been here only for a brief period, he has a considerable number of inquries for paper from his foreign connections and would be glad to have offers from American mills to fill his requirements.

Mr. De Vries has in past years not only made frequent trips to the United States in connection with his numerous business interests, but is married to an American woman who is a native of Chicago. Under all the circumstances, he feels that he will be able to adjust himself very rapidly to his new surroundings and be able to serve his numerous customers very satisfactorily.

May Save Davis Paper Co.

Concord, N. H., June 10, 1940. — One of the chief objections to the proposed Hopkinton-Everett floor control reservoir would be removed it is thought as Col. John Jacobson of the Water Resources board announced that army engineers are working on a plan to retain Hopkinton's leading industry, the Davis Paper Company.

Army engineers, on being questioned, said that a relocation of the dam would probably be the eventual solution with the paper company, having an assessed valuation of $175,000 and employing approximately 65 persons, remaining at its present site.

If the Davis company is saved, the loss in valuation to the town of Hopkinton through construction of the reservoir will be only about two per cent.

Japanese Paper Production Steady

WASHINGTON, D. C., June 12, 1940—Contrary to expectations and predictions, output of machine-made paper by members of the Japan Paper Manufacturers' Association in January was not drastically reduced in comparison with production in preceding months. The volume turned out in the month under review aggregated 156,764,000 pounds, a decline of only 5.2 per cent from December and 3.7 per cent less than output in January 1939. From these figures it appears that seasonal factors played almost as important a part in causing January output to be less than in December as did shortages of coal and electric power. Sales of machine-made paper by the associated companies during January exceeded production by 1,208,000 pounds, the volume sold being 157,972,000 pounds, declines of 4.7 per cent from December and 3.6 per cent from January 1939.

Exports of paper showed the usual seasonal decline in addition to the effects of restriction on shipments to the yen-bloc. The volume exported was 24,804,000 pounds, a decline of 47 per cent from December, but a gain of 15.3 per cent from the January 1939 total.

Hear Final Argument On Minimum Wage

WASHINGTON, D. C., June 12, 1940.—The final oral argument was held today before Colonel Philip B. Fleming, administrator of the Hours and Wages Division of the Labor Department, in connection with the 40-cent per hour minimum wage recommended by Industry Committee No. 11 for the pulp and primary paper industry.

Merrill A. Russell of Scott-MacLeish & Falk, Chicago, appeared on behalf of the Insulation Board Institute and the United States Gypsum Company. Boris Shiskin, chief economist of the American Federation of Labor, represented labor. Mr. Russell in his argument objected to having insulation board manufacturers included in the paper definition. Mr. Shiskin appeared in favor of the wage recommendation, while the American Paper and Pulp Association filed a statement in opposition to some portions of the wage recommendation. Colonel Fleming has now taken the whole case under advisement and it is expected that he will make a final decision with regard to the recommendations within the next few weeks.

International Declares Dividend

The board of directors of the International Paper and Power Company on Tuesday of this week declared a regular dividend of $1.25 a share for the second quarter of 1940 on the company's outstanding cumulative convertible 5 per cent preferred stock payable June 29 to holders of record at the close of business June 21. Undeclared cumulative dividends on this stock amount to $12.50 a share.

The board of directors of the International Paper Company, which also met Tuesday, did not take any action with respect to dividends. However, the International Paper and Power Company has agreed to pay to any of the few remaining holders of the International Paper Company 7 per cent preferred stock, who so wish, the further sum of $1.25 a share against an assignment of that amount of dividends accrued on such stock.

Empire State TAPPI Elects

The annual meeting of the Empire State Section of the Technical Association of the Pulp and Paper Industry was held at the Jefferson County Golf Club, Watertown, N. Y. on Saturday, June 8. A golf tournament, skeet shoot and bridge party was held in the afternoon. The following officers were elected for the coming year: Chairman—F. C. Goodwill, St. Regis Paper Company, Deferiet, N. Y. Vice Chairman—H. D. Cook, Sweet Brothers, Phoenix, N. Y. Secy-Treas.—M. H. Bennett, Stebbins Engineering and Manufacturing Company, Watertown, N. Y.

Members of the executive committee are: Syracuse District—Robert F. Huntley, Oswego Falls Corporation, Fulton, N. Y.; Albany District—Vance P. Edwardes, International Paper Company, Palmer, N. Y.; Watertown District—C. H. Lindsly, Latex Fiber Industries, Beaver Falls, N. Y.; Niagara District—W. A. Chilson, Hooker Electrochemical Company, Niagara Falls, N. Y.

Those who attended were: A. W. Ayles, W. E. Bailey, Lyman Beeman, M. H. Bennett, W. Ronald Benson, Hilliard D. Cook, Howard W. Duggan, F. C. Goodwill, Robert F. Huntley, Corwin T. Jewell, H. E. Karberg, C. E. Libby, H. L. Mellen, H. Thayer Murphy, W. J. O'Brien, Harold Remington, Homer M. Rice, L. G. Simons, H. A. Spencer, Beaumont Thomas, E. F. Tucker, Dexter B. Williams, F. M. Williams, J. J. Williams and S. J. Young.

Britain Increases Import Licenses

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 12, 1940—British Board of Trade has announced that prior import licenses will be required for all products which have not hitherto been subject to that requirement, according to a cablegram from the American Embassy, London.

Since most products imported into the United Kingdom from the United States have already been made subject to import licenses at various times since last September, this new order affects American trade only to a limited extent and in certain special lines. Moreover, for the larger part of the products of interest to American exporters being brought under the import licensing system, open general licenses are provided, under which it will not be necessary to make application for each individual transaction.

Roy Zellers Given Dinner

KALAMAZOO, Mich., June 10, 1940—On Saturday evening June 8 at the Kalamazoo Country club a testimonial dinner was given in honor of Roy L. Zellers superintendent of the French Paper Company at Miles, Mich., and past national President of the American Pulp and Paper Mill superintendents association. Mr. Zellers has resigned from his position at Niles to accept a similar post with the Chillicothe Paper Company Chillicothe, Ohio.

The dinner was jointly sponsored by the Michigan Division and Mr. Zellers' friends in this area, between thirty and forty being present. He was presented with a travelling bag, Ray L. Barton of the Michigan Paper Company Plainwell making the presentation speech. A goodly number of those present gave short talks, expressing their esteem and wishing him success on his new connection.

McIntyre Goes With Dexter Sulphite

E. F. McIntyre, for twelve years with the Champion Paper and Fibre Company at Canton, N. C., and for the past three years in charge of sales of Paperboard for the Canton division of that concern, became connected on May 15 with the Dexter Sulphite Pulp and Paper Company at Dexter, N. Y. in the capacity of assistant manager. He will devote considerable time to the supervision of sales of Dexter's mitscherlich sulphite grades.

Mr. McIntyre is also Vice-president of McIntyre

E. F. McINTYRE

Brothers Paper Company, Inc., manufacturers of anti tarnish tissue at Fayetteville, N. Y. and will become active in the management of the affairs of that concern, assisting his father, W. E. McIntyre.

Japanese Pulp Production Lower

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 12, 1940—Conditions in the Japanese wood pulp market during 1939 and January and February of the current year were seriously affected by a combination of circumstances never before encountered. Domestic output was gravely affected by shortages of raw materials, coal and electric power, and by insufficient supplies of water during the summer months. Owing to these handicaps and also because the goal set for the year 1939, as part of the five year pulp production expansion plan, announced in 1937, were much too high from a practical standpoint, the total output for the year was a considerable disappointment.

Supplies of wood pulp from countries other than Manchukuo continued to be restricted during the year, the shortage being particularly acute with regard to rayon pulp. Purchases of the latter were being made on a hand-to-mouth basis when the outbreak of the war in Europe abruptly changed the market situation. With rayon pulp in heavy demand in many parts of the world, Japanese buyers suddenly found themselves in the unenviable position of being unable to secure the tonnage required. Another direct effect of conditions in Europe was the uncertainty relative to deliveries of pulp making equipment for the many pulp enterprises launched during the year in various parts of the Japanese Empire and Manchukuo.

New Flow Meter

A simplified flow meter, operating on an exclusive free-floating moving container principle, for the accurate metering of steam, water, air or gas, is being placed on the market by the American District Steam Company, North Tonawanda, N. Y., pioneer manufacturers of flow meters for over 25 years.

Known as the ADSCO Flow Meter, it operates in conjunction with an orifice plate in the pipe line and records the flow on a large evenly divided chart by means of an exclusive frictionless mechanism. Integrating counters and illuminated indicating scales are fitted when specified. All charts and counters show the flow directly and no factor has to be applied to the readings. The meter maintains its accuracy under the most severe operating conditions and cannot be damaged by overloads or reverse flows.

The internal moving parts within the meter comprise a magnet attached to a mercury container suspended from a spring. A fixed, internally shaped bell surrounds the lower portion of the magnet and forms a seal with the mercury in the container beneath it. The movement of the container is directly proportional to the flow through the orifice, and follower magnets in the external recording mechanism transmit the movement to a gravity-held pen arm which records on the chart.

The chart and integrator mechanism is driven by a powerful, synchronous A. C. clock motor of a capacity far in excess of actual drive requirements. The entire meter is expertly built of high quality materials to exacting standards to insure prolonged operating efficiency.

The ADSCO Flow Meter is offered in four types, (1) recording only, (2) recording and integrating, (3) indicating and recording and (4) indicating, recording and integrating. In addition, an auxiliary pressure recorder can be fitted to any model to record the working pressure on the same chart as the flow.

Complete details of construction of the ADSCO Flow Meter are illustrated and described in a twelve page, two-color 8½ x 11 inch Bulletin No. 35-83 which is available by addressing the American District Steam Company, North Tonawanda, N. Y.

Robertson Co. To Give Vacations

The Robertson Paper Box Company has posted the following notice in its plant of Montville, Conn.:—

"Vacation time is almost upon us and so it has been decided to shut down the entire plant from Saturday morning, June 29, to Monday morning, July 8.

"Each employee who has been continuously in the employ of the company for the previous twelve months will be given vacation pay of 40 hours based on his or her average hourly earnings this year, excluding overtime. Salaried employees will be given vacation pay as previously.

"It will be necessary for a very few employees to work during this period and those entitled to a vacation with pay, as above, will be given it at a later date.

"This is an experiment and establishes no precedent for future years, but is part of this company's program of constantly improving working conditions, promoting cordial employee-employer relations, and bettering the welfare of our employees.

"We hope that everyone will have a thoroughly enjoyable vacation."

BELOIT *Installations*

IN THE SOUTH

29 BELOIT PAPER MACHINES
COMBINED WIDTH 4958 INCHES
123 BELOIT PATENTED SUCTION ROLLS
9 BELOIT PATENTED HORIZONTAL DUAL PRESSES

THE BELOIT WAY BELOIT IRON WORKS PAPER MACH'Y BELOIT WIS. **IS THE MODERN WAY**

BELOIT IRON WORKS BELOIT WISCONSIN

CONSTRUCTION NEWS

Charlotte, N. C.—The Old Dominion Box Company, 528 Turner avenue, manufacturer of corrugated boxes and containers, has approved plans for new one-story addition to plant, 80 x 100 feet, designed for storage, distribution and other operating service. Cost is reported about $35,000, with equipment. Contract for erection has been let to R. C. Hicks, Piedmont Building, Charlotte, and work will be placed under way at once. M. R. Marsh, Builders' Building, Charlotte, is architect.

Mobile, Ala.—The Hollingsworth & Whitney Company, 140 Federal street, Boston, Mass., has completed plans for new addition to mill at Magazine Point, Mobile, used for the production of kraft paper stocks. It will be one-story, designed primarily for laboratory service, with locker division. Cost is estimated at $50,000, including equipment. Erection contract has been awarded to the Rust Engineering Company, Clark Building, Pittsburgh, Pa., and Martin Building, Birmingham, Ala. Work is scheduled to begin at early date. This will form another unit at the new mill of the company at location noted, recently completed by the contractor mentioned, and which will be developed to maximum output at early date. Hardy S. Ferguson & Company, 200 Fifth avenue, New York, N. Y., engineers for the mill, also prepared plans for the laboratory structure.

Albany, Ga.—The Albany Paper Company has begun construction of new one-story plant unit for converting department, storage and distribution, and will push to early completion. As recently noted in these columns, new unit is reported to cost approximately $40,000, including equipment, and will be ready for service, it is stated, before the close of summer. Erection will be carried out under direction of Kenneth Hodges. Hentz, Adler & Shutze, Candler Building, Atlanta, Ga., are architects.

Sandusky, Ohio—The Sandusky Folding Box Corporation, 607 King street, manufacturer of folding paper boxes and containers for food products and other service, has completed plans for new addition to plant, consisting of a one-story and basement unit, 60 x 120 feet, estimated to cost close to $35,000, with equipment. Contract for erection has been awarded to the Herman Ziemke Company, Sandusky, and work is scheduled to begin at early date.

Lancaster, Pa.—The Armstrong Cork Company, manufacturer of insulating board, cork board and allied products, has superstructure in progress for new addition to local mill, previously referred to in these columns, to be one and two story, 65 x 550 feet, providing for considerable increase in present capacity. It is reported to cost in excess of $150,000, including equipment. General erection contract is being carried out by Herman Wohlsens' Sons Company, Lancaster.

Greenville, Miss.—The United States Gypsum Company, 300 West Adams street, Chicago, Ill., manufacturer of wall board, insulating board, etc., has completed plans for new addition to branch mill at Greenville, used for production of wood pulp insulating board specialties. It will be one-story, used for storage, distribution and other operating service. Cost estimated close to $50,000, including equipment. General construction award has been made to the Campbell-Lowrie-Lautermilch Corporation, 400 West Madison street, Chicago, and work will be placed under way at once. This is one of several expansion projects now being carried out by company at different mills. At East Chicago, Ind., a new one-story addition will be built at early date, about 50 x 220 feet, to cost over $75,000, with equipment; revised plans for the unit are being completed. Bids are being closed for a one-story extension to plant at 56th street and Schuylkill avenue, Philadelphia, Pa., reported to cost in excess of $50,000, with equipment. It is expected to begin work on this unit by the close of this month.

Charlotte, N. C.—The Carolina Paper Board Corporation, manufacturer of box board products, has approved plans for one-story addition to mill, to be used primarily for storage and distribution. Cost reported over $30,000, including equipment. General contract for erection has been awarded to R. C. Hicks, Piedmont Building, Charlotte, and work is scheduled to begin at once. Southern Engineering Company, Charlotte, is engineer.

Franklin, Ohio—The Logan-Long Company, manufacturer of roofing products, roll roofing, etc., is having plans prepared by McKeown Brothers Company, 5235 South Keeler avenue, Chicago, Ill., structural steel designer, for proposed addition to branch mill at Franklin, recently referred to in these columns, and bids for construction are scheduled to be asked soon. It will be one-story, 100 x 200 feet, reported to cost close to $75,000, with equipment. A portion of unit will be used for storage and distribution. Main offices of company are at 37 West Van Buren street, Chicago.

New York, N. Y.—The G. & F. Paper Supply Company has leased space in building at 107-13 West Twenty-fifth street, and will occupy at once for company headquarters, storage and distribution.

York, Pa.—The Schmidt & Ault Paper Company, King's Mill road, manufacturer of wrapping papers, box board and kindred paper stocks, has work under way on new two-story addition to mill, for which general contract recently was awarded to D. A. Smith, York, and will push work to early completion. New structure will be used for storage, distribution and other operating service, and is reported to cost close to $45,000, including equipment.

New Westminster, B. C.—W. M. Meighan, Port Moody, B. C., is at the head of a project to construct and operate a new pulp mill at New Westminster, where site is being secured. Proposed plant will comprise several one and multi-story units, and is reported to cost over $300,000, with machinery. It is proposed to organize a new company to carry out the development. H. Cunningham, mayor of Port Moody, is said to be interested in project, which is expected to mature during the summer.

Port Alberni, B. C.—Bloedel, Stewart & Welsh, Ltd., 510 Hastings street, Vancouver, B. C., is said to have plans in progress by Howard Simons, 435 North Michigan avenue, Chicago, Ill., consulting en-

gineer, for proposed new sulphite pulp mill at Port Alberni, where site recently has been secured. It will comprise several large production units, with power house, pumping station, machine shop, and other mechanical structures. Cost reported about $2,500,000, with machinery. It is planned to begin actual work on project in near future.

Chicago, Ill.—The Thousand and Five Products, Inc., 82 West Washington street, has been charted with capital of 100 shares of stock, to manufacture and deal in processed papers, carbon paper stocks and allied products. The incorporators include M. F. Salkeld and M. Murphy.

New York, N. Y.—The Minden Paper Gauge Company, Inc., has been organized with capital of 100 shares of stock, no par value, to manufacture precision instruments and gauges for use in the paper industry. New company is represented by Albert D. Kanrich, 42 West Thirty-ninth street, New York, attorney.

New Companies

Long Island City, New York, N. Y.—Waxed Papers, Inc., has been organized under state laws, with capital of $200,000, to manufacture and deal in waxed and other processed paper stocks. It is understood that new company will be identified with paper mill interests in Michigan. It is represented by Butzel, Levin & Winston, National Bank Building, Detroit, Mich., attorneys.

Brooklyn, N. Y.—The Carol Paper Products Corporation has been chartered with capital of $20,000, to deal in paper goods of various kinds. New company is represented by Blackstone Stationers, Inc., 63 Park Row, New York.

Detroit, Mich.—The Wholesale Waste Paper Company, 960 Macomb street, has been incorporated with nominal capital of $5000, to deal in waste paper products. Julius Rotenberg, 1477 Woodland avenue, Detroit, is principal incorporator and head.

May Transact Business in Tennessee

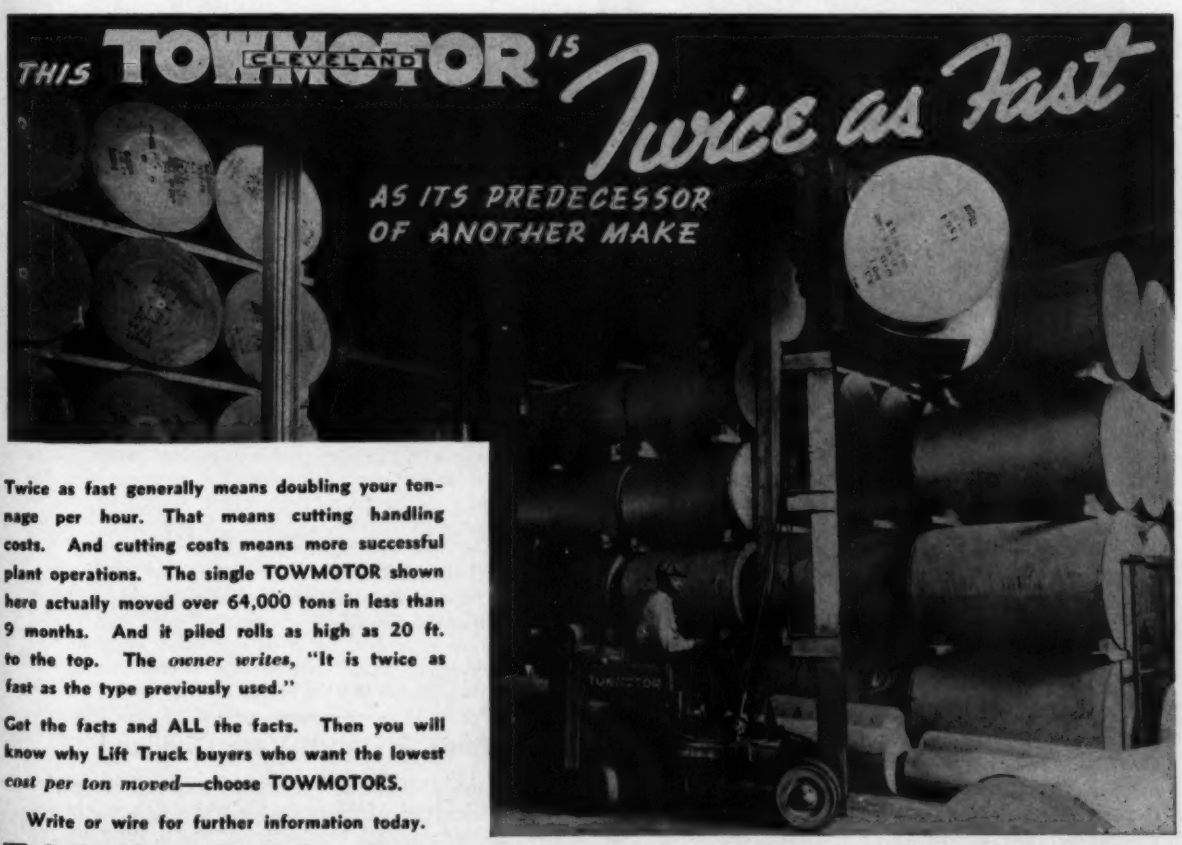
The Tennessee Valley Paper Mill, Inc., of Savannah, Tenn., of which former Gov. Gordon Browning is president, has received permission to transact business in Tennessee from the State Insurance and Banking Department.

In announcing the issuance of a certificate of qualification to the company, Commissioner James M. McCormack stated that "certain requirements have been made by the department which were complied with, and among them was a reduction of the voting power and participation of the promoter's stock pending repayment of the indebtedness of the corporation to the investors."

"The certificate further provides that the commissioner of insurance and banking in no wise recommends the securities to be offered for sale by this company, which provision is required by the statute," the statement continued.

Mr. McCormack said the issue qualified "is 23,925 shares of common stock and debentures in the amount of $2,392,500."

The company will use Southern slash pine.



Twice as fast generally means doubling your tonnage per hour. That means cutting handling costs. And cutting costs means more successful plant operations. The single TOWMOTOR shown here actually moved over 64,000 tons in less than 9 months. And it piled rolls as high as 20 ft. to the top. The *owner writes*, "It is twice as fast as the type previously used."

Get the facts and ALL the facts. Then you will know why Lift Truck buyers who want the lowest *cost per ton moved*—choose TOWMOTORS.

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FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending June 12, 1940

	High	Low	Last
A. P. W.	2½	2	2⅛
Armstrong Cork Co.	26¼	23⅝	25¾
Celotex Corp.	6⅜	5⅛	6⅜
Celotex Corp., pf.	50	50	50
Certain-Teed Products Corp.	4⅜	3⅝	4⅜
Certain-Teed Products Corp., pf.	19½	16⅛	19½
Champion Paper & Fibre Co.	21½	20	21½
Champion Paper & Fibre Co., pf.	102	100	100½
Congoleum-Nairn Co.	16	14½	15¾
Container Corp. of America	12⅜	10⅜	12½
Continental-Diamond Fibre Co.	6¼	5¾	6¼
Crown-Zellerbach Co.	14¾	12½	14¼
Crown-Zellerbach Co., pf.	81	79	81
Flintkote Co.	12¼	10⅝	11⅞
Robert Gair	2⅜	2⅜	2⅜
Robert Gair, pf.	12⅞	11	12⅞
International Paper & Power	13⅞	10¼	13½
International Paper & Power, pf.	50	41	48¾
Johns-Manville Corp.	49¾	44	49½
Johns-Manville Corp., pf.	125½	123½	123½
Kimberly Clark Corp.	35½	31⅛	35½
Masonite Corp.	23½	21¾	23½
Mead Corp.	9⅝	8	9⅜
Mead Corp., pf.	63	63	63
Paraffine Companies, Inc.	28½	26½	28½
Rayonier, Inc.	18⅜	13¾	17⅜
Rayonier, Inc., pf.	29	25⅜	28½
Ruberoid Co.	13	12⅜	13
Scott Paper Co.	36½	35⅛	35½
Scott Paper Co., pf.	102	102	102
Sutherland Paper Co.	22	22	22
Union Bag & Paper Corp.	12⅜	9⅜	11⅞
United Paperboard Co.	3⅜	3¼	3½
U. S. Gypsum Co.	54⅞	50	54½
U. S. Gypsum Co., pf.	167½	167½	167½

New York Curb Exchange

High, Low and Last for Week Ending June 12, 1940

	High	Low	Last
American Box Board Co.	4½	4⅜	4½
Brown Co., pf.	20	18¾	20
Great Northern Paper	36	36	36
National Container Corp.	10½	9	10½
St. Regis Paper Co.	2⅜	2¼	2¾
St. Regis Paper Co., pf.	59½	51	59½
Taggart Corp.	3⅜	2⅜	3⅜

Sale of Abitibi Opposed

TORONTO, June 9, 1940—A judge of the Ontario Supreme Court is expected to announce within a few days a decision vitally affecting the future of the Abitibi Power and Paper Company, which has been in receivership almost eight years.

After a representative of the Ontario government had voiced formal opposition to any immediate sale of the company's assets, Mr. Justice W. E. Middleton reserved judgment Saturday on an application by bondholders for a court order to sell those assets, now estimated to total more than $121,000,000. But the judge promised he would announce his decision "shortly."

The Montreal Trust Company, acting for first-mortgage bondholders, sought the sale in the latest of a long series of moves by Abitibi investors to recover on their investment.

Preferred and common shareholders and unsecured creditors of the company joined the Provincial government in opposing the application, asserting the present is no time to attempt a financial undertaking of such magnitude.

The province's representative, C. R. Magone, of the Attorney-General's department, said the government has served notice of cancellation of an agreement giving Abitibi the right to cut timber in the province.

Mr. Magone said the agreement was signed June 24, 1937, and renewed March 9, 1939, with the specific stipulation that if the company had not been taken out of receivership by April 1, 1940, the province could rescind the pact by giving six months' notice to the Abitibi receiver.

This notice of cancellation has been given by the government, and if the agreement does finally die and is not replaced by a new set-up satisfactory to Ontario, Abitibi will be left with only two timber limits instead of its present seven, Mr. Magone told the court.

He stressed that he had been instructed by the government "not to make any threat or promise," but merely to suggest to the judge that the case be adjourned to give all interested parties a further chance to reach a mutually acceptable arrangement.

W. N. Tilley, of Toronto, one of counsel for Montreal Trust Company, said those seeking sale of the assets represent about 60 per cent of all Abitibi bondholders.

Mr. Tilley said the Abitibi mills now are running at more than 90 per cent of capacity, and that this would be an ideal time for selling the assets.

Celotex Nets $77,468

Net earnings of $77,468 after all charges are reported by the Celotex Corporation for the second quarter ended April 30. This is an increase in earnings of $54,933 over the same quarter of last year.

Net loss, however, for the six months ended April 30 was $117,396, as against a net profit of $10,399 for the same six months of the previous fiscal year.

On the other hand, May sales this year represented the largest monthly volume in the history of the corporation, being 40 per cent greater than April and 26 per cent above those of May, 1939.

These monthly sales increases, according to Bror G. Dahlberg, president, offer evidence that construction in the early months of this year was retarded because of severe weather, which in turn delayed the normal seasonal expansion in the sale of building materials.

The war in Europe and defense measures in this country will probably result in greater building industry activity, Mr. Dahlberg told branch managers of the company meeting in Chicago last week.

"On the other hand," he added, "business will be tougher to get. Profit margins are likely to be smaller. Production, distribution and advertising must be made more efficient than ever before. None of us can afford to relax.

"Companies manufacturing basic products need have no fear of diminished business," said Mr. Dahlberg. As an example, he cited the experience of the Celotex English plant, which has been running at capacity ever since the outbreak of the war.

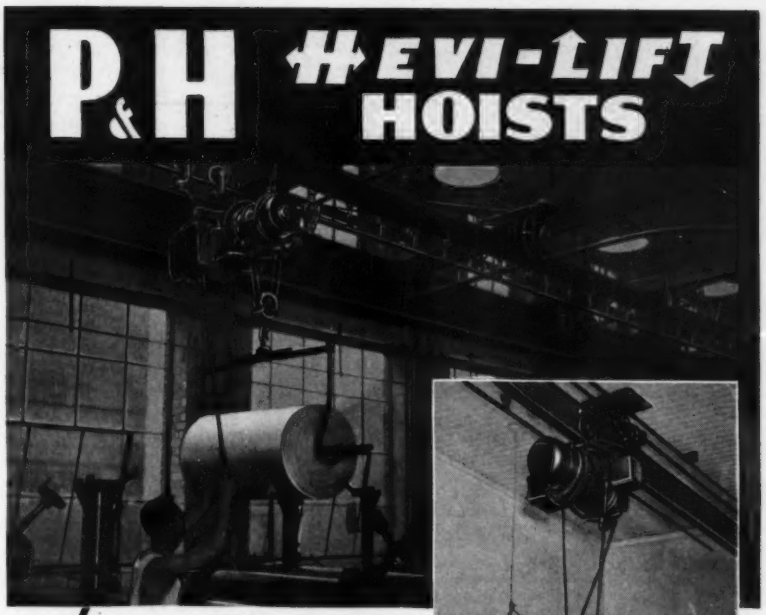
Hinde & Dauch Vote Dividend

The Hinde & Dauch Paper Company have declared a dividend of 25 cents a share on the common stock, payable July 1 to stock of record June 10. A payment of the same amount was made on March 30.

J. H. Quinn Dead

[FROM OUR REGULAR CORRESPONDENT]

BROWNVILLE, N. Y., June 10, 1940—James H. Quinn, for many years prominently identified with the paper mill industry, died last week at his home here following a brief illness. When he retired about eight years ago he was superintendent of the Brownville Board Company, but earlier he had been superintendent and vice president of the Carthage Pulp and Board Company. At one time he was also superintendent of the Hinde & Dauche Co., at Watertown. In July, 1920, after having been superintendent of the Belleville Paper Co., of Belleville, Ont., he returned to Watertown to take over the superintendency of the branch of the Hinde & Dauche Co. Considered an expert paper mill man he has been connected with various well known concerns, among these being the Union Paper Co., of Monogahela, Pa. The Hinde & Dauch mill was equipped at that time with two machines, being among the most modern container board mills in this section. In 1926 Mr. Quinn helped to establish the Carthage Pulp and Board Company which was later purchased by a banking concern at a receiver's sale. The plant had been remodeled. He served as general manager and vice president of the concern and also had charge of operations. In 1932 the mill was closed and Mr. Quinn went to the Utica plant of the Foster Box Board Company as general superintendent. In 1933 he took over the superintendency of the Brownville Board Company a position he held until he retired. The principal survivors are his two daughters and a sister.



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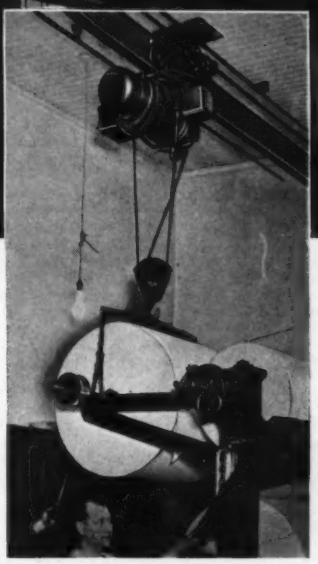
Whether it's raw materials or finished products — in processing, storage or shipping — heavy loads move swiftly, safely, effortlessly, with "Thru-the-Air" handling by P&H Hevi-Lift Hoists.

It's time to modernize your handling methods. A P&H hoist engineer, familiar with your problems in the pulp and paper industries, can show you the practical answers. Ask one to call. Or write for Bulletin H-5.



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To Develop Power at Elk Falls

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., June 10, 1940—Renewed reports of proposals to harness the vast potential power of the Elk Falls on Campbell River, at the northern end of Vancouver Island, B. C., for operation of a big rayon mill are now current at the Parliament Buildings at Victoria, B. C.

It is reported that this project will involve an expenditure of around $10,000,000. The plan has been mooted on several occasions in the past, and while government officials have reported that serious negotiations were under way no concrete action was taken. It is now stated that arrangements to finance the mill and hydro electric development are being discussed by Canadian and United States capitalists.

The present disruption of rayon production in European countries is believed to have increased possibilities of markets and therefore revived interest in the proposal.

Col. Smalley Visits in Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 10, 1940—Colonel E. Smalley, managing director of Edwin Butterworth & Co., Limited, Manchester, England, dealers in paper stock, was at the American office of the concern, E. Butterworth & Co., Inc., for a few days last week.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 110 June 13, 1940 No. 24

COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Olympic Hotel, Seattle, Wash., August 20-23.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Convention, Netherland Plaza Hotel, Cincinnati, Ohio. June 18-20.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Stevens Hotel, Chicago, Ill. October 7-11.

TAXING AND SPENDING

With some forecasters of national expenditures estimating a federal budget of more than twice that of the current year for 1941, the rising national debt is viewed with grave concern by many business men. In the past decade the nation's debt has increased from $16,000,000,000 to nearly $45,000,000,000 and the latter debt limit will be raised to $48,000,000,000. This extension of the debt limit, established during the last world conflict, is considered necessary because Congress is unable to find other means to finance the national defense program except to borrow more funds and raise taxes.

The mounting burden of taxation has often been given as the primary cause of the failure of industry and trade to advance to higher levels of activity. In commenting on the tax burden on business the last issue of *The Guaranty Survey* published by the Guaranty Trust Company of New York said in part: "No one questions the desirability of taxation for the support of the essential functions of government, but taxes that bear so heavily on any group—workers, consumers, investors or proprietors—that productive effort ceases to be worth while and the industrial machine slows down are inherently uneconomic. And the tax load has increased to the point where it represents one of the principal deterrents to business recovery and reemployment. Yet, present taxes, high as they are, fall far short of meeting the cost of government. In the not distant future this nation will probably be forced, in one way or another, to face the fact that it is living beyond its means and that retrenchment in non-essentials is not merely desirable but imperative, especially in view of the greatly enlarged expenditures for national defense that must be met."

New Deal taxing, spending and financial regulations are blamed for the lag in capital essential for a high level of prosperity, in a report made by the Brookings Institution. The report is based on a two-year investigation of the stagnation of capital markets and denies that the United States has reached a state of "economic maturity" necessitating large public spending to assist private enterprise. The report states that there is private money and private need sufficient to absorb the country's capital and labor resources for many years in the future, and declares that government taxation policies and Securities and Exchange Commission regulations which impede the flow of funds must be removed if stable conditions are to be re-established.

The persistence of huge fiscal deficits and consequent growth of the public debt, the report states, have unquestionably lessened the disposition of both enterprisers and investors to assume the risks inherent in long-term capital commitments. Uneasiness over the future of private investment is accentuated by fears of an ultimate breakdown of public credit, accompanied by price and wage inflation. The report points out that the growing competition of government credit agencies with private institutions and individuals in diverse fields has militated against private lending. These factors, although indirect and largely psychological in character, are said to constitute serious impediments to long-term investment.

Dr. Cleona Lewis of the Brookings Institution declares that the declne in production since 1929 proves merely that there has been a protracted depression. The increase in population since 1929, the estimated further increase in the next forty years, and the requirements for raising living standards of the present population, are found to offer an ample basis for large-scale private capital construction. Annual additions of $4,000,000,000 to $5,000,000,000 to productive plant and equipment, and of about $6,000,000,000 to housing facilities are asserted to be necessary over the next generations to provide a reasonably satisfactory standard of living. In addition, there would be large public requirements for highways, streets, sewers and other utilities.

No support was found in the Brookings study for the contention that large industrial corporations have reached a point where they can finance their potential capital requirements from "internal" sources. The view that corporations have been providing for capital expansion out of "depreciation reserves" is based, it is stated, on a failure to distinguish between mere replacement of old capital and building up of new capital. Additions in recent years to corporate sur-

pluses, from which new plant and equipment might be constructed, have been negligible.

Government policies and action, according to the report, have impeded the flow of capital into constructive developments in several ways, as follows: Taxation policies have tended to drive investors to high-grade securities; regulation has raised the costs and increased the risks of capital flotations; the persistence of deficit spending has undermined confidence in public credit; and the development of a maze of government lending agencies has narrowed such private investment channels as remain. The existing taxation system, described as one developed without thought of possible effects on the capital market, was said to encourage investment in high-grade bonds, particularly tax-exempt issues, while discouraging investment in equity securities. Inasmuch as the primary need at present is for expansion of capital enterprise through stock flotations, the effect of present tax laws is called serious.

The long time involved in complying with SEC rules, the report states, has increased market risks in the issuance of new securities. The costs of legal and other expenses in complying with the Securities Act have been high for small corporations and, similary, the law has worked against small local dealers. The study also states that securities regulation has been a contributing factor, rather than a major factor in restricting the flow of capital.

Employment High in Paper Mills

Paper and pulp mills and allied industries continue to rank among the leaders in stabilized employment in Wisconsin, according to Paul A. Raushenbush, director of the state's unemployment compensation division. More than half of the 7,264 employers' accounts continue to pay the standard rate of 2.7 per cent of payroll because of their withdrawals. There are 94 accounts in the paper and allied products division, and 68 of these are in the merit class, those whose reserves are large enough so they pay only one per cent of payroll, or nothing at all if the reserves equal ten per cent of payroll. The other 26 pay the 2.7 per cent rate because of withdrawals due to layoffs of workers. Total contributions received by the state for the reserve accounts from the time the law was placed in effect through June 1939 amount to $52,625,402. Withdrawals in the same period paid out as benefits to employees total $13,554,954.

Brownville Paper Co. Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

BROWNVILLE, N. Y., June 10, 1940—The annual meeting of stockholders of the Brownville Paper Company was held here this week at which officers for the year were chosen. Samuel A. Upham was re-elected president. Other officers re-elected are Robert L. Pease, vice president, and James H. Lingenfelter, secretary-treasurer. The directors of the company will include the officers, George F. Clark and Seymour M. Jones.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1940	1939	1938	1937	1936	1935	1934
January	90.2%	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	86.2%	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	86.3%	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	91.7%	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	.....	79.7%	66.0%	87.3%	80.7%	72.3%	.....
July	.....	75.2%	72.0%	81.8%	77.3%	64.9%	.....
August	.....	82.9%	77.2%	82.9%	81.5%	70.9%	.....
September	.....	88.7%	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	96.6%	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	97.2%	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	91.1%	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	84.9%	72.3%	80.6%	81.3%	70.5%	.....
First 22 weeks	87.9%	81.3%	67.7%	90.4%	78.9%	69.0%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1940		CORRESPONDING WEEKS, 1939	
April 27	91.2%	April 29	84.3%
May 4	91.1%	May 6	83.6%
May 11	90.5%	May 13	82.0%
May 18	92.5%	May 20	81.3%
May 25	94.0%	May 27	79.9%
*June 1	90.8%	June 3	74.2%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	April 27, 1940	May 4, 1940	May 11, 1940	May 18, 1940	May 25, 1940	June 1, 1940
0% to 50%	46	44	47	41	39	52
51% to 100%	256	253	250	246	237	191
Total Mills Reporting	302	297	297	287	276	243

PAPERBOARD OPERATING RATIOS

Per cent of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	63%
1940	71%	70%	69%	70%	76%	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	72%	74%	84%	81%	71%	70%
1940	....	....	....	....	....	....

Week end. Apr. 27, 1940—75%
Week end. May 4, 1940—77%
Week end. May 11, 1940—74%
Week end. May 18, 1940—76%
Week end. May 25, 1940—79%
Week end. June 1, 1940—75%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.
* Preliminary figure.

Buys Paper Under Walsh-Healey Act

WASHINGTON, D. C., June 12, 1940—During the week ended May 25, the Government purchased $958,071.01 worth of paper and allied products under the Walsh-Healey Act as follows: $127,000.00 worth of envelopes for the Post Office Department from Oles Envelope Corporation, Baltimore, Md.; $30,000.00 worth of envelopes for the Post Office Department from Western Paper Goods Company, Cincinnati, Ohio; $77,000.00 worth of envelopes for the Post Office Department from Commercial Envelope Co., Inc., Baltimore, Md.; $330,000.00 worth of envelopes for the Post Office Department from Union Envelope Company, Richmond, Va.; $379,000.00 worth of envelopes for the Post Office Department from U. S. Envelope Company, Springfield, Mass.; and $15,071.01 worth of wrapping paper for the Post Office Department from R. P. Andrews Paper Company. Washington, D. C.

LOCKWOOD'S DIRECTORY OF THE PAPER AND ALLIED TRADES

1940—65th Annual Edition—1940

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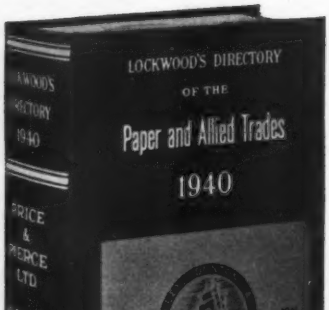
Classified List of Pulp Mill Products, United States and Canada
Coated Paper Manufacturers
Envelope Manufacturers
Equipment, Supplies and Technical Service
Firms Having Two or More Mills in United States and Canada
Glazed and Coated Paper Manufacturers
Mill Officials
Pad Manufacturers
Paper and Pulp Mills in United States and Canada
Paper and Pulp Mills in Cuba and Mexico
Paper Bag Manufacturers
Paper Box Manufacturers
Paper Makers' Chemicals and Supplies
Paper Merchants, United States and Canada
Paper Specialties
Papeterie Manufacturers
Prepared Roofing Manufacturers
Pulp Testing Chemists
Rags and Paper Stock Consumed by the Mills
Rag and Paper Stock Dealers
Statistical Table of Mills
Tablet Manufacturers
Tag Manufacturers
Toilet Paper Manufacturers
Trade Associations
Twine Manufacturers in United States and Canada
Vegetable Parchment Paper Manufacturers
Wall Paper Printers
Watermarks and Brands
Waxed Paper Manufacturers
Wood Pulp Importers



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Velo Cold Set Process in Printing and Its Relationship to Paper*

By Frank G. Breyer[1]

Abstract

An important limiting factor on printing speed is the time required for liquid ink to dry. Heat and more heat, and at a higher temperature has been applied until the paper has been deteriorated in many cases. A new approach to the problem of high speed printing and better printing is in the form of ink, apparatus, and a process whereby the ink sets or dries by cold rather than by the application of heat.

Cold set printing is the process of drying ink by freezing instead of by absorption, evaporation, oxidation, or polymerization. The fluidity of the ink necessary to feed it properly from the fountain to the relief surfaces is realized by melting the solid that will finally be deposited on the paper. When the hot ink touches the relatively cold paper, it freezes or solidifies without penetration and remains as a solid deposit in relief on the top of the fibers. The fibers may be loose or tight, coated or uncoated. There is no lateral spread or vertical penetration due to fiber suction as with liquid inks.

The cold set ink does not penetrate as normally applied, however, penetration may be desired and is accomplished by heating the paper after printing. The simplest way to effect penetration is to run the paper after each impression over a steam or hot water cylinder.

Low pick test papers may be used, and on ordinary newsprint a 133-mesh screen will retain the sharpness of outline and absence of fill-in characteristic of a higher grade paper in ordinary printing.

One of the limiting factors on printing speed is the time required for liquid ink to dry. Heat and more heat, and at a higher temperature has been applied until the paper has been tried beyond the limits of its endurance in many cases. The Velo[2] Cold Set printing process promises to relieve the paper manufacturer from many of the problems with which he is confronted as a consequence of too much penetration and too much heat.

What Is Cold Set Printing

Cold set printing is the process of drying ink by freezing instead of by absorption, evaporation, oxidation, or polymerization. All inks when dry on the paper are solid mixtures of color and binder. In the regular processes of printing, however, the ink has to be fluid in order to feed from the fountain to the relief printing surfaces in controlled amounts. This fluidity is obtained by the use of fluids, and a fluid mixture of color and binder is deposited on the paper which is the cause of the printer's major problem, drying.

In the cold set process the fluidity of the ink necessary to feed it properly from the fountain to the relief surfaces is realized simply by melting the solid that is wanted finally as a deposit on the paper. The fountain, the ink carriage steels, and the plate cylinder are heated by hot water circulating within. This keeps the ink fluid and controllable. When the hot ink touches the cold paper, i.e., cold compared with the temperature of the ink, it freezes or solidifies without penetration and remains as a solid deposit in relief on the fibers.

If the foregoing is a fair statement of what cold set printing is, then obviously it should make very little difference what kind of surface you print on. The fibers may be loose or tight. They may be uncoated or coated. Starting from a half tone dot the cold set ink always sets on top of the fibers or coating in sharp relief, where it was deposited. There is no lateral spread or vertical penetration due to fiber suction as with liquid inks.

A rough sampling of the opinion of publishers indicates that a lighter, whiter, less glossy paper is what they want for many purposes. There is a limitation to the extent to which the paper manufacturer can go in his efforts to meet this need, and that barrier is liquid ink. Liquid ink has to be sucked off of a relief surface or out of a gravure cup by paper suction. If there is paper suction, there is ink penetration, and the degree of that penetration limits the thinness of the paper on account of strike-through. It would seem that with this ink the limitation on thinness becomes one of strength and opacity only. Titanium coated or filled manifold or airmail paper already indicate the direction in which the papermaker may go in meeting this specific re-

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[1] Member of firm of Singmaster & Breyer, Metallurgists and Chemical Engineers, 420 Lexington Ave., New York, N. Y.

[2] Velo is the trade-name of the J. M. Huber Company (manufacturers of ink) for their cold set inks and printing process.

quirement as he is freed from the limitations of penetrating liquid ink.

While it is true that the ink does not penetrate as normally applied, if for any reason penetration is desired, all that is necessary is to heat the paper after printing. The ink then becomes liquid, the normal suction of the paper operates, and there is penetration. How much penetration is effected depends upon the temperature to which the paper has been raised and the time allowed before it is cool. The simplest way to get this effect is to run the paper after each impression over a steam or hot water cylinder.

The maximum achievement of the cold set process may be the elimination of all strike-through hence reduced demand for low absorption papers.

Development of the Cold Set Process

In the early stages of the development of the cold set process we were not so conscious of the difference in the mechanism of deposit on the paper surface between liquid ink and cold set ink as we became later in commercial runs. In these later commercial runs we quickly became aware of the fact that not only were cleanups of the relief surfaces unnecessary because there was no oxidation, hardening, or gumming of the ink, but also because there were no fiber or coating particles working back from the paper.

Low pick test coated stock holds little terror for this process. If you picture the mechanics of deposit in the cold set operation this is understandable. When the hot ink touches the cold surface of the paper, the viscosity of the ink film next to the paper increases enormously, while the surface of the ink next to the heated metal relief surface remains highly fluid. As a consequence the ink is pulled away from the relief surfaces. This not only eliminates fiber and clay nuisance on the carriage rollers but prevents fill-ins in fine screen work. With little tendency to fill in we are able to print on ordinary newsprint with 133-mesh screen and retain the sharpness of outline and absence of fill-in characteristic of much higher grade paper. Of course, we get better results with better paper. The difference, however, between the old and the new process is sharper on the more porous stocks. As full advantage of the kiss type of ink deposit mechanism is realized, much over-impression and many makeready maneuvers may be avoided.

Other consequences of this radical conception that the way to dry ink is by cooling, not by heating, and that the way to make ink liquid and hence workable on a press is by melting a solid rather than by using liquids or liquefying a solid by means of liquids. Of these consequences, nothing is more in keeping with the times than the removal of all limitation on speed. Inasmuch as the cold of the paper is the setting agent, the faster the paper goes through the press, the more setting effect is available. The only limitation on speed on the commercial presses that we have operated with so far are the mechanical limitations of the machine itself.

Another consequence is that since there is no wet ink to smear or offset, no blotting paper (offset webs) or offset compounds are needed.

Of most interest, however, to you paper technicians, undoubtedly, is the fact that we do not heat the paper. This is not literally true, because there is some heat in the ink which is abstracted by the paper, but when we consider that one pound of ink covers 50 pounds of paper on two sides with printing, you can see that the temperature rise of the paper is at most only a few degrees. Heating and dessicating paper in order to dry ink brings out even minute irregularities in the stock. When this is coupled with the long leads between impressions which the heating and cooling operations require, a test is put upon paper that only luxury goods can justify meeting.

Cold Set Printing

Method of Melting the Ink

In the cold set process the ink is a solid, not a liquid or a paste; it is all ink, no volatile, no waste. Up to the present time the ink has been furnished only in a solid mass in regular ink containers, from which it is broken out with a hammer. A bucketful of black ink looks like a bucket of coal when broken up. The ability to package and handle the ink in solid pieces of a given weight has important advantages to the printer. At the present time, the cracked pieces of solid ink are dumped at intervals into a regular ink fountain, which has been water jacketed and insulated. Hot water at about 200 deg. F. is circulated through the jacket at a rate determined by the rate of ink fed to the carriage. In this fountain the ink is melted and brought to the temperature necessary to get the proper fluidity to feed out on the fountain ball, across the ink carriage, onto the form rollers, and the printing forms under proper control.

The fountain ball, a hollow cylinder, is similarly supplied with hot water within, so that its temperature is uniform across its width and around its circumference. The ink cylinders, the vibrating steel cylinders, and the plate cylinder are all similarly fed with hot water in controlled amounts to maintain this highly important uniformity across the width and around the circumference. The rubber or synthetic rubber rollers are not heated, although they will withstand high temperature. These will come up to temperature rapidly by contact with the heated steels and with the hot ink which covers them. Heat applied in this manner, i.e., from within the cylinders by hot water, has a number of advantages. The first is that there can be no overheating and no underheating because the source of the heat, the hot water, is entered and exited from the fountain and the cylinders within a few degrees of the temperature at which it is desired to maintain the ink. Second, the ink on the outside of the cylinders is an insulator so that there is no great loss of heat to the surrounding air. In the preferred form of equipment the ink carriage is equipped with a separate small motor and drive, so that when it is not locked in with the press driving gears, an automatic switch starts the little motor and keeps the carriage turning over slowly. By this means the heat is kept uniform at all times and everything is ready to operate the minute the carriage is locked into the press.

Source of Heat for Melting Ink

The hot water supply may come from any source where its pressure and temperature are under control. We have used both electric heaters for heating water and low pressure steam. The last commercial test showed that we were using about 280 pounds of steam per ton of paper, printing two sides, and

using about 50 pounds of ink. The cost of steam based on 50 cents per 1000 pounds is negligible.

Where it is desired for any reason to work at temperatures above 212 deg. F., glycerine, Dowtherm, or other liquid heat transfer mediums may be used. Since the heat required to melt a pound of ink and heat it to 212 deg. F. is about 150 Btu., the heat actually carried by the ink to the paper when printing with 50 pounds of ink to a ton of paper is only 7,500 Btu. per ton of paper, or slightly less than 4 Btu. per pound of paper. If no heat were dissipated, this would raise the temperature of the paper only 10 deg. F. Actually, of course, most of this heat is immediately lost as the paper moves through the press, so that the real temperature rise in the paper is hardly measurable.

APPLICABILITY OF THE PROCESS TO PRESENT PRINTING PRESSES

An important consideration in connection with cold set printing is the fact that practically all types of presently operating web presses can be readily converted to this process of printing. With the exception of hot water connections to the shafts and fountain, there is no other outward change to the press. The operation is the same as with regular ink, except that the offset mechanism is eliminated. Further, if for any reason it is desired to print with the regular letter press inks, this can be done simply by turning off the heat.

Acknowledgment

The present results come from the cooperation of several groups and many individuals. The basic idea of setting ink by cold instead of heat came from Walter Huber, president of J. M. Huber Inc. It is with his permission that this paper is given at this time. The John Waldron Corporation, of New Brunswick, N. J., and in particular Lynn Case, the vice president and general manager, has contributed basic ideas on the apparatus design. The cooperation of the Art Color Printing Company at Dunellen and their entire personnel has been of the highest. The vision, faithfulness, and persistence of the research staff of J. M. Huber Inc. and in particular Lothian W. Burgess in charge of this cold set division, must be credited. I take particular pleasure in acknowledging the thoroughly practical and always to the point advice and help of our master printer, Eddie O'Hara of N. Y. No. 51 I.P.P. of A.U.

Kalamazoo TAPPI Meets

The annual June meeting of the Kalamazoo Valley Section of TAPPI was held at the Gull Lake Country Club near Kalamazoo on the afternoon and evening of June 6, 1940.

Forty-one long, short, fat and thin hardy golfers braved the prospects of a rainy afternoon and hied themselves out to Gull Lake in the early afternoon to chase that pretty white ball through the thickets and tall grasses.

At approximately seven-thirty a repast of steaks was served. Everybody ate fast and furious because they were anxious to find out what the Edgar Brothers Company and the Hercules Powder Company had in store for them in the way of prizes.

Seventy hungry men were served at dinner.

Immediately following the dinner the assemblage adjourned to the parlors of the Club and after getting comfortably seated were entertained by a dancing and singing girl-act from the radio station WKZO. They dedicated their love songs to Kent Kidder, Wm. Kirkpatrick, and Harry Bradford. Following the dancing act two juvenile amateur boxers squared off for a three-round bout. These boys are twins but after a couple of socks you never would know it.

A short business meeting had to be held to elect officers for the coming year. Those elected were W. Kent Kidder of the Bryant Paper Co., as Chairman; Fred Chappell of Hercules as Vice Chairman; F. D. Elliott of the Kelly Ink Co., as Secretary; and Arthur Weinland of the Lee Paper Co., as Treasurer. Wm. Kirkpatrick, the retiring Chairman, was elected to a three-year term on the Executive Committee of the section.

Golf prizes were awarded to John Logan for low net of 66 and to John Tooker for low gross of 77. Blind bogeys went to Hod Heath and Dick Polleys. John Stroud carried off the honors for low putts, using that club only 29 times on the eighteen holes. Roddy Roux got second with a 31. John Gilkey had the most fun and got the most exercise of all and captured the high gross with a 122.

Those who were at the dinner were: Art Woollam, R. W. Polleys, Merle Wilkins, J. L. Russell, J. W. Gilkey, John Logan, John Tooker, C. F. Sommerville, Ralph Atkins, J. R. Stroud, H. Smith, M. A. Bailey, Roy Holden, Mr. LaRue, E. T. A. Coughlin, Wayne Crotty, Otto Fischer, Bill Parkes, Ray L. Barton, William H. Astle, R. J. Hurst, Leon H. Mimms, Glen Ingling, Frank Libby, Al Perlick, E. H. Barnes, F. L. Zellers, Les LaLiberte, Dave Klausmeyer, Walter B. Hadley, Glen Graham, Walter Wolf, J. F. Carrigan, Hod Heath, E. F. Whittington, Harry Bradford, Henry Nendorf, W. K. Kidder, O. W. Callighan, Paul de Guehery, C. F. Simmerer, Walter Johnson, Myron F. Flotow, William Shaw, A. Hays, James R. Verdon, John Tuberty, A. W. Cole, H. F. Heller, Marvin C. Jones, P. W. Bartholmew, John Heenan, Al Sherwood, and Norman J. Cowie.

To Study Function of Sulphur

The Texas Gulf Sulphur Company, Inc., 75 East 45 street, New York, N. Y., on May 15, 1940 inaugurated a long range program of research at the Institute of Paper Chemistry at Appleton, Wis. The initial investigation will be devoted to the study of the function of sulphur and its compounds in the production of sulphate pulp as well as the possible use of sulphur in combination with paper products. The scope of the research is intentionally broad, and it is hoped that the information obtained will be of benefit to the entire pulp and paper industry.

This is the second research project undertaken by the Institute of Paper Chemistry for the Texas Gulf Sulphur Company. The first, in collaboration with Texas Gulf engineers, resulted in the perfection of the Tegul sulphur burner in which molten sulphur is sprayed and burned, and which operates somewhat like the common oil burner.

The present research program is planned to make available to the pulp and paper industry more information regarding sulphur. Specifically, one objective is the study of the sulphate process which is being used to an increasing extent in converting the soft woods of the South into wood pulp. This sulphate process as well as the sulphite process requires a sulphur compound as one of the active pulping agents. It is hoped the present research will help to determine how these sulphur compounds can be most efficiently applied. The second immediate objective of the research is to determine whether sulphur can be combined with certain waste products in the production of articles of commercial utility or whether sulphur can be used to impart novel properties to pulp and paper and thus increase their field of usefulness. Arrangements have been made to publish the results of this investigation from time to time and thus make them available to the entire pulp and paper industry.

Effects of the Wettability of Paper Coating Raw Stock*

By Glenn Davidson [1]

Abstract

A number of empirical experiments have been narrated which support the belief that a surprisingly large proportion of the total casein in a coating color migrates into the body stock. Inferences are made relative to some of the factors which influence this migration.

Details are given of work done in support of the hypothesis that uneven wetting of the body stock by the coating color accounts for the light and dark areas frequently observed in the Case ink test and for the areas which first pick in printing.

This paper does not present a fundamental research. One of the principle reasons for its presentation is the hope that it might influence some research on the rate of wetting of paper stock by coating colors and casein solutions.

Workers in the author's laboratory have long been convinced that the extent of the wetting of the body stock by the coating color is a matter of prime importance in coating operations. While our search of the literature admittedly has not been as thorough as we would like to have made it, yet the only published experiment we have found dealing directly with the subject is a curve given by Cobb and Lowe *(1)* incidental to a description of a method of testing sizing. This curve indicates that the coating color wets the sheet somewhat more rapidly than water, particularly within the first minute or two after contact. In commercial coating operations, it is the wetting that can take place in this first minute or two that is vitally important, since in most cases the coating has dried enough in less than two minutes to preclude further wetting.

Unfortunately Cobb and Lowe do not give any information relative to the *p*H, viscosity, or percentage solids of their coating color or the nature of the alkali with which the casein was cut or the *p*H of the sheet used. All of these factors and perhaps numerous others have an important bearing on the rate of wetting.

Of course, under the title of sizing one can find voluminous publications on the wetting of paper by water, printers ink, alcohol, etc. Foote *(2)* has published some particularly ingenious experiments designed to measure the angle of contact between paper fibers and liquids. He gives results for water, alcohol, benzene, and formamide, but unfortunately for those of us interested in coating, none for casein solutions or coating colors. In the absence of definite information, except in isolated cases, it is hazardous to draw any very close parallel between the wetting effects of coating colors and that of water.

Experiments With Various Quantities of Clay and Casein

Some time ago the author had occasion to attempt to coat a wet sheet of paper stock containing approximately 70 per cent water. Using a coating color sized with a casein solution made by cutting casein with 8 per cent soda ash and 2 per cent ammonia, it was found that 35-45 lb. of casein per 100 lb. of clay were required to produce the same bonding of the coating to the sheet that could readily be obtained with 12 lb. of casein per 100 lb. of clay, if the sheet were first dried to 8 per cent moisture. The uncoated sheet gave a negative test for protein with Delafield's haematoxylin solution. After coating at 70 per cent moisture content with a coating color containing 35-45 lb. of casein per 100 lb. of clay and drying, the body stock appeared to be saturated with protein when tested with haematoxylin.

On the other hand, when the stock was first dried to 8 per cent moisture and then coated with a coating color containing 12 lb. of casein per 100 lb. of clay the body stock gave a relatively faint test for protein with haematoxylin but sufficiently positive to indicate definite infiltration of casein deeply into the sheet. Perhaps this is an isolated case where a parallel could be fairly safely drawn with Foote's observation that with water "a zero angle of contact is formed on wet fibers irrespective of the condition of the fiber."

Recently, using a coating color containing 12 lb. of casein (cut with 8 per cent soda ash and 2 per cent ammonia) per 100 lb. of clay, we coated a sheet of ordinary coating stock and a sheet of no. 1 hanging stock (a very hard-sized sheet) side by side. The coating bonded to the sheet of coating stock strongly but weakly to the hanging stock. After calendering, Case ink was applied to these two coated sheets simultaneously. The coating on the hanging stock was found to be very much more non receptive than the same coating on the ordinary coating stock. In fact, it was necessary to apply to the coating stock a coating containing 18 lb. of casein per 100 lb. of clay to get Case ink nonreceptivity equal to that obtained with the coating containing 12 lb. of casein per 100 lb. of clay on the hanging stock.

The explanation of this is based on the assumption that the interfacial tension between the casein solution component of the coating color and surface of the hanging stock was so high that not enough casein could traverse this interface before the coating dried, to adequately anchor the coating to the sheet. Conversely more casein necessarily remained in the dried coating to fill the voids between the clay.

The fact that it was necessary to use as much as 18 lb. casein per 100 lb. of clay on the coating stock to equal in nonreceptivity 12 lb. of casein per 100 lb. of clay on the hanging stock might seem to indicate that a rather surprisingly large percentage of the

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 19-22, 1940.

[1] Member TAPPI, 237 Commonwealth Ave., Aurora, Ill.

total casein in a coating color normally traverses the interface between the coating and the body stock. We were disappointed to find that the hanging stock as well as all the other extremely hard-sized sheets available were not protein-free and, accordingly, we could not test with haematoxylin.

Experiments With pH

Some months ago, we were working with two coating colors, each containing 12 lb. of casein per 100 lb. of clay. One contained casein cut with borax and had a *p*H of 7.5 and the other contained casein cut with soda ash and ammonia and had a *p*H of 9.5. At the time we had on hand, twelve samples of coating stocks secured from almost as many different coating mills. We coated each of these stocks with both of the above colors. The color containing the soda ash-cut casein bonded perfectly to all of the twelve sheets. The color containing the borax-cut casein bonded fairly well to eight sheets and very weakly to the remaining four. The uncoated stocks were all spotted with universal indicator. The four sheets to which the color containing the borax-cut casein bonded weakly appeared to have a *p*H of 7.0 or slightly above. The sheets to which this color did bond fairly well appeared to possess a *p*H of less than 4.5. One sample each of the stocks, to which this color did and did not bond well, were found to be protein-free to haematoxylin. The protein-free sheet to which the color bonded fairly well showed definite protein coloration with haematoxylin when tested after coating. When tested likewise, the protein-free sheet, to which the color bonded weakly, showed no protein coloration whatever.

We then treated the protein-free stock to which the color containing the borax-cut casein bonded weakly with a light coat of 1 per cent alum solution and dried it. Judging by universal indicator, it appeared that we reduced the surface *p*H of this stock to perhaps 3.5. After the alum treatment, the color containing the borax-cut casein bonded to this stock satisfactorily. Furthermore, when the alum treated stock coated with the color containing the borax-cut casein was tested with haematoxylin, it showed a definite protein coloration deep in the body stock.

These experiences have been described, because they are typical of a great variety and number of empirical experiences, all of which lead us to suspect that in commercial coating operations a rather surprisingly large proportion of the total casein in a coating color must traverse the interface between the coating and the body stock in a very short time. In high speed coating operations, where the sheet is dried very rapidly after the application of the coating, this time would be measured in seconds. Further, the conditions prevailing at the interface, such as for example, the character of the surface of the sheet, the *p*H differential between the coating and the sheet and the moisture content of the sheet, greatly influence the efficiency of this migration of casein across the interface.

As a result of these miscellaneous experiences, we became so strongly convinced, that the migration of casein from coating color into the body stock plays such a major role in the coating operation, that we began to wonder whether or not it might be at the root of some of the eccentricities that occur even within a given square inch of a sheet of coated stock.

It is a matter of common observation that if a sheet of paper is floated on water, ink, or casein size, the upper surface usually does not become uniformly wet at first, i. e., the medium upon which the paper is being floated will penetrate through some small areas of the sheet faster than through other small adjacent areas.

Perhaps Foote's observation that the "angle of contact formed between the fiber and water varies from point to point along the fiber . . ." is a fundamental explanation of this behavior. Perhaps the distribution of the pores must be considered.

The lapse of time between the appearance of the first wet spots and complete wetting of the top of the sheet will vary considerably from one sample of paper stock to another. In any event, the author has reasoned that this rather commonplace observation may be connected with some of the important characteristics of the finished coated paper. If the casein from the coating can likewise penetrate into certain small areas of the body stock more rapidly than into other small adjacent areas, it follows that the areas in coating overlying the areas of the body stock into which the casein penetrates more slowly, should contain more casein than the surrounding areas, where the casein can penetrate more rapidly into the body stock. If this is true, it would cause the coating to accept Case ink unevenly. Further, if in these same areas the casein has been unable to flow from the coating into the sheet sufficiently to recement the surface fibers which have been weakened and disrupted by swelling, these areas should be the first to pick, when the sheet is printed. We determined to see, if we could secure some confirming physical evidence in support of this hypothesis.

Experimental Procedure

Materials

From the coating stocks available, the one which showed the greatest lapse of time from the appearance of the first wet spots to the complete wetting of the top surface of the sheet when floated on casein size was selected. The other materials were coating clay, Sheffield casein, soda ash, ammonia (26 deg. Be.), Case ink, and a varnish consisting of six parts of rosin and four parts of boiled linseed oil. The equipment included: Martinson laboratory coating machine, laboratory variable speed printing press, laboratory calender, and miscellaneous laboratory mixers, waterbaths, etc.

Procedure

The casein was dispersed with 8 per cent soda ash and 2 per cent ammonia (26 deg. Be). A clay coating solution was made containing 38 per cent total solids, using 12 per cent casein on the purchase weight of the clay. This coating solution was applied to the body stock at the rate of 15-16 lb. of dry coating per ream (25 in. by 38 in. — 480). The coating was not brushed either before or after passing under the Martinson doctor blade. Sheets which did not show a substantially perfectly uniform coating were discarded. The coating was allowed to dry spontaneously. By close observation during the drying, it was observed that certain small areas of the coating became dull in advance of others and conversely certain small areas remained bright and shiny after the surrounding areas were dull. This period in the drying of the sheet, wherein it appeared more or less mottled with alternating dull and shiny areas

lasted only a few seconds. However, it was possible to encircle with a mark made with a sharp stylus in the partially wet coating a few of the areas which remained bright and shiny for the longest time. These circles approximated 5/16 in. in diameter. The sheet was then completely dried, calendered, and tested with Case ink. Figure 1 shows an example of the results obtained. In viewing this figure some allowance can be made for the difficulties encountered in photographing the grey-blue shade of Case ink. For example, the light area within the circle to the left shows only faintly in the photograph, whereas it was distinct in the original and even the areas within the other circles were considerably sharper in the original than they appear in the photograph.

It is believed that immediately underlying the areas of coating which remained bright and shiny longest were areas of body stock into which the casein could not penetrate as rapidly as into surrounding areas, thus more casein was left in the coating in such areas, to more completely fill the voids between the clay particles, and accordingly, give less receptivity to Case ink.

Sheets of body stock were coated, dried, calendered, and tested with Case ink as described above, except that the circles made by the stylus in the wet coating were omitted. Instead, a lead pencil line was drawn on the back of the sheet, encircling the areas least receptive to the Case ink. These circles approximated 5/16 in. in diameter. Using varnish as ink, these sheets were printed over the Case ink, with a large solid area. The speed of the press was adjusted, by trial and error, until only a few areas would pick. Figure 2 shows an example of the results obtained. This figure was photographed by transmitted light, a sheet which had been treated with Case ink and then printed with varnish. In a majority of the cases the picks came within the circles which had been drawn around the areas least receptive to Case ink. Within these areas the casein probably did not leave the coating enough to recement the surface fibers disrupted by swelling to the main body of the sheet. This was due to the lack of easy wettability of the body stock at these points.

At first it was believed that the reason, the light areas showing in the Case ink test picked first, was that inasmuch as they obviously contained less Case ink than the surrounding areas, the printing varnish might more effectively wet them. It was found, however, that if the Case ink was applied to the sheet and immediately removed, the press speed required to produce picks was the same as was true when the Case ink was left on the sheet for the conventional two minutes. In other words, the thinnest possible film of Case ink on the sheet appears to produce the same resistance to wetting by the printing varnish, in the split second required for the printing that is produced by the more thorough impregnation with the Case ink secured in the two minute treatment.

FIG. 1.

FIG. 2.

There was also the possibility that the Case ink was selectively strengthening the areas which it most thoroughly impregnated. It developed that the stock selected for this work was above average in strength. As a result, it was found that the printing press could be speeded up to a point where about 60 per cent of the coating could be picked off without demolishing the test sheet, i. e., without producing more than surface fiber disruption. Case ink-treated sheets, printed at a speed which would pick about 60 per cent of the printed area, were compared with sheets similarly printed but not treated with Case ink. The extent of the fiber disruption indicated that the ink treatment was slightly weakening the bonding of the coating to the body stock.

It was recognized that it would be desirable to relate the areas which remain bright longest as the sheet dries to the areas which first pick in printing without going through the Case ink step. But, due to the fact that these areas are visible as the sheet dries for only a very few seconds and then only by reflected light, we were unable to mark them on the back of the sheet. We printed some sheets directly (omitting the Case ink), where these areas had been outlined with the stylus in the wet coating on the face of the sheet. While under these conditions the areas within the stylus circles picked first, the pick always started from the leading periphery of the stylus circle. In a large percentage of the cases, the entire area within the stylus circle would pick off neat and clean leaving the surrounding areas intact. In these cases, the interesting observation could be made that the extent of the fiber disruption decreased progressively from the periphery of the circle to its center.

Conclusions

The areas in a casein clay coating which are last to become dull as the coating dries have been related to the areas which show the least receptivity to Case ink.

The areas in a sheet of coated paper which show the least receptivity to Case ink have been related to the areas most susceptible to picking when printed.

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(1) Cobb and Lowe. A sizing test and a sizing theory. *Tech. Assoc. Papers* 17:213-216 (June, 1934).

(2) Foote, James E. A method for the measurement of the angle of contact formed between a liquid surface and a fiber, and the application of this and swelling data to pore diameter measurements. *Paper Trade J.* 109, no. 14:180 (Oct. 5, 1939).

The Flocculation and Dispersion of Papermaking Fibers*

By August Erspamer[1]

Abstract

A study of the factors involved in fiber flocculation and dispersion was made by means of the flocculation tester developed by Wollwage (1) as well as by the measurement of the formation of handsheets made under standardized conditions. The results obtained by the two methods showed that a definite correlation exists between the behavior in the flocculation tester and the formation of handsheets.

Sveen glue flocculates pulp which has been previously treated with alum. No effect is observed when glue alone is added to the pulp, or when the alum is added after the glue. It has been concluded that the glue effect most likely depends upon the adsorption of negatively charged glue by positively charged alumina floc to bring about an isoelectric condition on the fibers.

The effect of adding increasing amounts of positively charged alumina floc (from alum) was to cause fiber flocculation at first, and larger amounts brought about dispersion, but a negatively-charged precipitate produced by the addition of tetrasodium pyrophosphate dispersed pulp without any initial flocculation.

Clay (a hydrous filler) and starch were found to flocculate pulp while calcium carbonate had no effect; rosin size affected some dispersion when added to pulp in the presence of 5 per cent alum. Changes in pH between 4.0 and 7.2 had no appreciable effect.

Wetting agents were investigated, and their effects were explained on the basis of their electrical charge.

Locust bean gum and methylcellulose, strongly hydrophilic colloidal materials, were found to be very powerful dispersing agents, being much more effective than deacetylated karaya gum.

A comparison of the effects of various deflocculating agents showed that a concentration of between 0.1 and 0.5 per cent locust bean gum is as effective in dispersing pulp as a decrease in temperature from 25 to 8 deg. C., as 1 per cent deacetylated karaya gum, as 25 per cent alum, or as 5 per cent Onyxsan S (a positively-charged wetting agent).

The results of the flocculation tester runs and of the handsheet studies, as well as the electrokinetic potential studies, lead to the conclusion that both hydration film and electrokinetic potential (fiber charge) are important in the phenomena of fiber flocculation and dispersion. A knowledge of these two factors should contribute to an understanding of fiber flocculation and dispersion and should furnish a means of attaining any desired conditions of flocculation or dispersion within the conditions of these experiments.

The importance of formation in determining sheet properties cannot be overemphasized. A sheet with wild formation will, on the whole, have less desirable properties, i.e., printing quality, strength, etc., than a comparable sheet of good formation. In some cases, it has not been possible to obtain the desired formation because of fiber flocculation effects which take place after the stock has passed the slice.

In the case of white water recovery, on the other hand, maximum flocculation is desired in order to obtain the greatest efficiency. Further, flocculation undoubtedly plays an important role in increasing the retention of fiber and filler on the paper machine itself.

In his preliminary investigation, Wollwage *(1)* developed equipment and techniques which permitted a study of the flocculation of papermaking fibers in flowing suspension. Alumina floc, low white water temperatures, deacetylated karaya gum, and low fiber consistencies were found to decrease fiber flocculation markedly. Several factors, such as the presence of hydrophilic bentonite clay and wetting agents in the pulp and the degree of beating, increased the flocculation characteristics slightly, but an increase in fiber length did not have a marked effect.

The purpose of the present investigation was to make a more extensive study of the factors involved in fiber flocculation so as to establish more definitely their relative effects. In conjunction with the use of the flocculation tester, the technique involving the formation of handsheets under standardized conditions with the subsequent determination of formation has helped in determining the importance of the nonmechanical factors involved in sheet formation.

Finally, an investigation of the electrokinetic phenomena at cellulose interfaces (fiber charge) seemed to offer a means to a clearer understanding of the fundamental causes of fiber flocculation The marked effects brought about by nonmechanical factors, such as are involved in the use of alum, Sveen glue, and deacetylated karaya gum, indicated that there was the possibility of existence of fiber to fiber adhesion forces which are electrical in their ultimate nature.

Discussion of the Flocculation Process

The mechanism of any flocculation process depends upon the probability of collision and the probability of adhesion of the particles involved. Thus, if it were possible to have a pulp suspension in which there was no motion of the fibers in relation to each other, no flocculation would take place.

In a pulp suspension, turbulence or motion of the suspending medium causes a movement of the fibers so that they can approach and collide with one another. The more vigorous this motion, the greater the number of collisions; in addition to this motion,

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the probability of collision is also governed by fiber consistency (concentration).

If the conditions on the fiber surfaces are such that the fibers, on striking, can approach each other closely enough so that cohesive forces between the fibers will come into play, each collision will result in a union. However, if the two fibers approaching one another have a sufficiently high charge (of the same sign), or are surrounded by hydration films which prevent them from coming close enough for the cohesive forces to act, aggregation will not take place. It is not to be imagined, however, that these distances just mentioned are great, since they probably are most conveniently expressed in millimicrons. For example, in some instances fibers in a pulp suspension may appear to be in contact insofar as can be determined visually, yet they are not truly flocculated, because the slightest disturbance brings about dispersion.

The lower the charge on the fibers and the smaller the hydration film, the greater will be the flocculation tendency, because the fibers can approach each other more closely. In the case of fibers with opposite charges, the tendency to flocculate will be still greater, because the fibers will exert a mutual attraction on each other due to oppositeness of charge.

Once the fibers have flocculated, the motion which brought them together will now tend to tear them apart, and if the action is sufficiently violent, deflocculation will take place. Moreover, the viscosity (and thus temperature) of the medium plays an important role, since the greater the viscosity, the greater the frictional pull on the fibers and, as a result, the greater the tendency for dispersion to take place.

Experimental

The flocculation tester developed by Wollwage (*1*) was used for the preliminary work in this investigation. A detailed description of its construction and operation can be found in his article.

In the handsheet study, which involved the making of handsheets under standardized conditions with the subsequent determination of the formation, the sheetmaking machine described by Coghill *(2)* was used. Pulp at 2.5 per cent consistency, which had been stirred for 7500 revolutions in the standard British disintegrator, was diluted to 1 per cent consistency, and stirred for 5 min. with a small mixer. A volume of 500 cc. of this suspension was taken and the stirring continued for 2 min. before adding the stock to the headbox. When used, chemicals were added at this point.

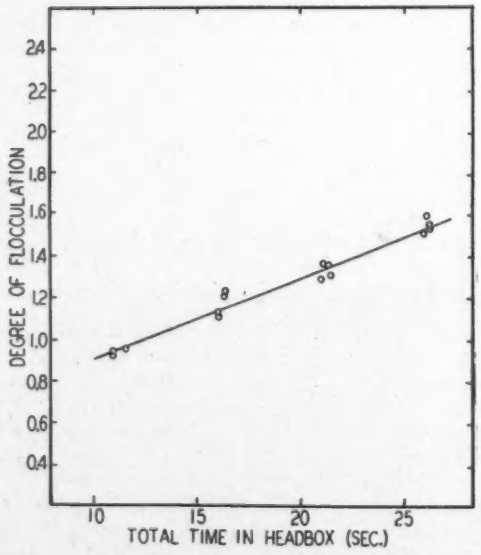

FIG. 1.
Reproducibility of Results in Handsheet Studies

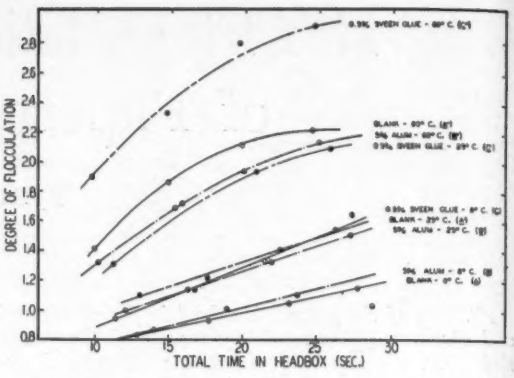

FIG. 2.
Effect of Temperature on Degree of Flocculation of Handsheets

The headbox was filled with tap water so as to give a total volume of 9 liters above the wire, and the temperature was adjusted to ± 0.3 deg. C. of the desired value. The pulp suspension was then added to the headbox and thoroughly dispersed by ten rapid up-and-down motions of the stirrer, bringing it up slowly on the last motion to quiet any excessive turbulence. A stop-watch was started just as the stirrer broke the surface, and the drain valve was opened after the stock suspension had stood in the headbox for a measured length of time. The stopwatch was stopped when the water had drained completely, and the times of standing and drainage were recorded. The sheet was couched onto a blotter using the Noble and Wood press and was dried while still on the blotter.

The Thwing formation tester (photoelectric) developed by Davis, Roehr, and Malmstrom (*3*) was used to measure the formation of handsheets. The so-called "formation number" of Davis (*3*) is determined by this instrument. In this investigation, however, ***degree of flocculation*** will be employed instead of "formation number." The greater the value of the ***degree of flocculation,*** the poorer the formation.

The standard pulp employed was an unbleached, quick-cook, Canadian spruce sulphite. The chemicals used were C. P. alum [$Al_2(SO_4)_3 \cdot 18H_2O$], C. P. anhydrous aluminum chloride ($AlCl_3$), C. P. tetrasodium pyrophosphate ($Na_4P_2O_7 \cdot 10H_2O$), commercial Sveen glue, Turkey red oil, Du Pont Product BC, Onyxsan *S*, and Duponol WA. Tapioca starch was cooked by heating to 90 deg. C. and locust bean gum dispersion was prepared in the same way.

Discussion of Results

Interpretation of Data

The procedure followed in interpreting the data obtained in the handsheet studies is illustrated in Fig. 1. The degree of flocculation of handsheets is plotted against the total time in the headbox, and the

curve most closely fitting these points is drawn. A straight line relationship is obtained for handsheets with a medium or low degree of flocculation, but in the case of handsheets with a high value for the degree of flocculation this straight line relationship no longer exists. There appears to be a limiting value of the degree of flocculation, depending upon the particular set of conditions studied.

While this method is less direct than that of the flocculation tester, it was shown to give results correlating with those of the flocculation tester, and it has the advantage of eliminating personal error, as well as of being sensitive to smaller differences. The results are reproducible to within ± 0.015 unit, with a probable error of ± 1.5 per cent and a maximum error of ± 3 per cent as compared with the probable error of ± 2.4 per cent and the maximum error of ± 4.5 per cent for the value of the dispersion index obtained by the flocculation tester.

The Effect of Temperature (Handsheet Studies)

In order to compare the results of handsheet studies with those of the flocculation tester, the effect of temperature was first investigated. A comparison of the relative effects of temperature on untreated pulp, pulp which has been treated with 5 per cent alum, and pulp to which 5 per cent alum and then 0.5 per cent Sveen glue have been added is given in Fig. 2. The results correlate closely with those obtained (*1*) with the flocculation tester. The effect of increasing temperature is to increase the degree of flocculation. At the two higher temperatures alum has a dispersing effect on the pulp, as compared with the blank, whereas it appears to enhance flocculation at the lower temperature. This is probably due to the fact that the hydrolysis of alum is retarded at the lower temperature, and thus the amount of alumina floc formed is just enough to lower the charge on the cellulose so that flocculation takes place. The same argument can apply to the effect of alum at 25 deg. C. Alum disperses pulp at the longer times of standing in the headbox, but it has only a slight effect at the shorter times, which also may be explained by the incomplete hydrolysis of the alum during the shorter times of standing in the headbox. The fact that there is a greater difference in degree of flocculation at 60 deg. C. between the blank and the alum run also supports this theory, because the hydrolysis of alum would be greater at the higher temperature.

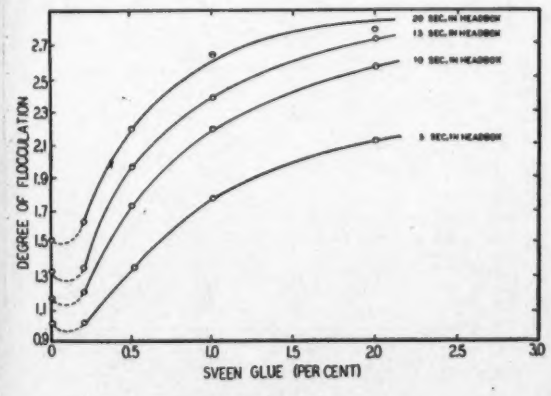

Fig. 3.
Effect of Sveen Glue on Degree of Flocculation of Handsheets

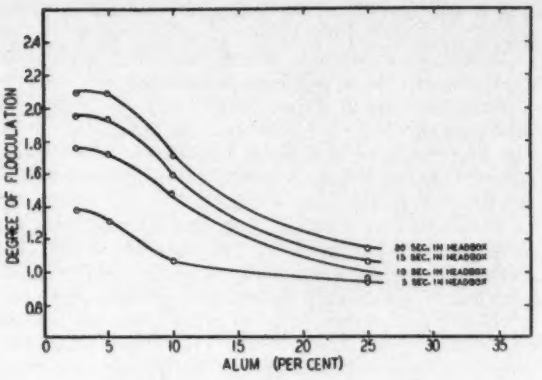

Fig. 4.
Effect of Alum on Degree of Flocculation of Handsheets Treated With 0.5 Sveen Glue

The presence of 0.5 per cent Sveen glue in the handsheets made at 8 deg. C. had a more marked flocculating effect than did an increase in temperature from 8 to 25 deg. C. On the other hand, raising the temperature from 25 to 60 deg. C. had a much greater influence than the addition of 0.5 per cent Sveen glue to the pulp at 25 deg. C. The pronounced flocculation by Sveen glue was evident even at 60 deg. C. and contributed to the already large temperature effect.

These results show that the temperature effects superimpose themselves upon the other flocculating and dispersing effects. The mechanism of the temperature effect has been attributed to the change in viscosity of the white water. While viscosity is undoubtedly important, there is some question as to whether it alone is the governing factor. Since it is known that the stability of colloids is dependent upon the hydration film as well as upon the charge, it is possible that the effect of temperature may be due, in part, to the removal of hydration film with increasing temperature.

The Effect of Sveen Glue

Sveen glue is a colloidally active glue made up of animal glue, rosin size, alum, and formaldehyde, which has been matured at low temperatures and is said to be a powerful flocculating agent when added to suspensions of fibers and/or fillers. Its use for improved retention on the paper machine has been described by Loddengaard (*4*).

The results of the Sveen glue studies may be summarized as follows:

1. Alum or aluminum chloride must first be added to the pulp suspension in order to obtain the glue flocculating effect. No effect is observed when glue alone is added to the pulp suspension or when the alum is added after the glue. Alumina floc or some other positively charged precipitate seems to be necessary, for when the *p*H is lowered so that no floc forms a dispersing rather than a flocculating effect is observed. When a strongly negatively-charged precipitate, such as that formed by tetrasodium pyrophosphate, is present, the glue effect is inhibited.

2. An ordinary glue dispersion gave a flocculating effect, but it was not as marked as the Sveen glue effect and, in addition, did not persist as long on continued circulation in the flocculation tester.

3. The presence of negatively-charged colloidal materials, such as clay, free rosin size, and starch,

was found to enhance the flocculating power of Sveen glue.

4. Handsheet studies showed that, with a constant alum content of 5 per cent, increasing amounts of Sveen glue (up to 2 per cent) raise the degree of flocculation (Fig. 3), whereas the addition of increasing amounts of alum to handsheets which had a constant glue content decreased the degree of flocculation (Fig. 4).

The results of both the flocculation tester and the handsheet studies lead to the conclusion that the Sveen glue effect most likely depends upon the adsorption of the negatively-charged glue by the positively-charged alumina floc to bring about an isoelectric condition on the fibers. The effect of adding alum to the isoelectric fibers is to increase their charge and thus enhance dispersion.

The Effect of Alum

The addition of increasing amounts of alum to handsheets in the range of 0 to 45 per cent (based on the weight of fiber present) first gave rise to a greater degree of flocculation (Fig. 5), whereas the higher percentages caused dispersion. This is explained by the effect of the positively-charged alumina floc in first lowering the charge on the negatively-charged fibers so that an isoelectric condition is created. The subsequent dispersion is attributed to the larger positive charge conferred on the fiber, as well as to the possibility that the dispersing effect is due to hydration effects of the alumina floc.

The method of addition is important, for it was found that alumina floc precipitated in the absence of fibers was much less effective in dispersing pulp than the floc formed in the presence of the stock. Adding the alum in several portions instead of all at one time gave a still better result.

The Effect of Tetrasodium Pyrophosphate

Tetrasodium pyrophosphate effected dispersion, without an initial flocculation, when added to a tap water suspension of pulp, and the dispersing action was as great as that with alum. However, no effect was observed when the tetrasodium pyrophosphate was mixed with a pulp suspension in distilled water, and dispersion was brought about only by the addition of calcium chloride which formed a precipitate with the pyrophosphate. This result, as well as the results obtained in the alum, aluminum chloride, and Sveen glue experiments, proved conclusively that

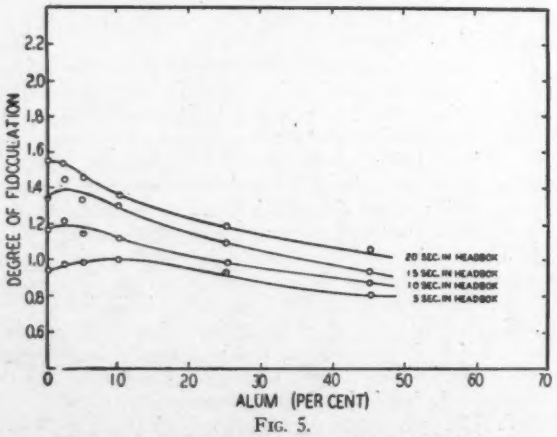

Fig. 5.

Effect of Alum on Degree of Flocculation of Handsheets

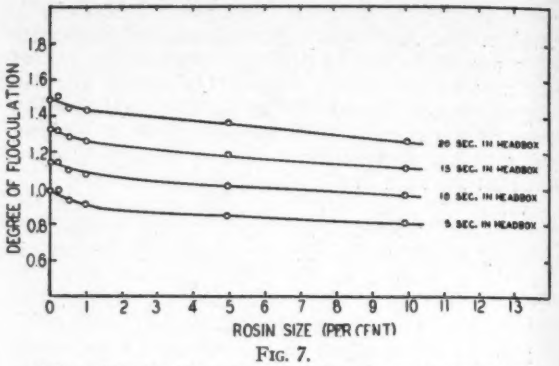

Fig. 7.

Effect of Rosin Size on Degree of Flocculation of Handsheets

any marked flocculating or dispersing effects are due to the action of colloidally active substances and not to anions or cations.

The addition of increasing amounts of tetrasodium pyrophosphate, which gives a negatively-charged precipitate in contrast to the positively-charged alumina floc, to a pulp suspension which had been previously dispersed with alum gave rise (Fig. 6) to a marked flocculation at first, but dispersion set in when larger percentages were used. This phenomenon is explained on the basis of charge on the fiber and the modification of this charge. The initial additions of pyrophosphate lowered the positive charge, conferred by the alumina floc, so that it approached isoelectric conditions, whereas the final dispersion was due to the negative charge conferred by the pyrophosphate floc.

The Effect of *p*H on Fiber Flocculation

Because *p*H is a variable involved in paper machine operation and white water recovery, a knowledge of its influence on fiber flocculation would be of interest. A study carried out with the flocculation tester showed that the flocculation characteristics of pulp

TABLE I.—THE EFFECT OF pH ON THE FLOCCULATION OF PULP IN TAP WATER

Run	Temperature deg. C. start	Temperature deg. C. finish	White Water pH start	White Water pH finish	Dispersion index *	Slope constant *
9 and 10....	24.8	26.5	6.8	7.2	1.23	0.95
25	25.0	25.3	4.0	4.8	1.15	0.95

* Defined by Wollwage (*1*).

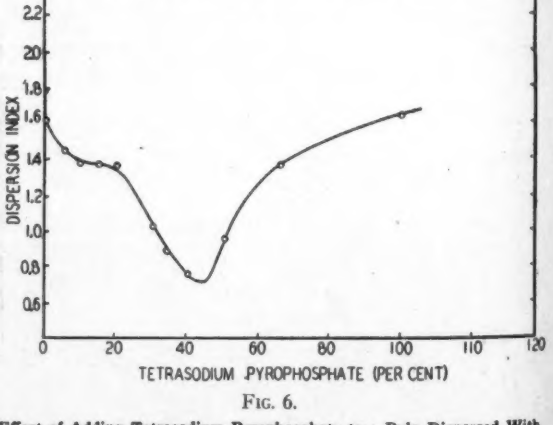

Fig. 6.

Effect of Adding Tetrasodium Pyrophosphate to a Pulp Dispersed With 150 Per Cent Alum

were practically the same for the *p*H range 4.0—7.2 (Table I). It can be safely said that *p*H variations in the paper range have a negligible effect on flocculation. This is in agreement with previous results, which showed that any marked flocculating and dispersing effects are brought about by colloidally active substances.

The Effect of Rosin Size

Handsheet studies were carried out using a neutral rosin size. The alum content was constant at 5 per cent, and the *p*H was maintained at 5.2 by the addition of sulphuric acid to the headbox. The results plotted in Fig. 7 show that rosin size has an appreciable dispersing effect.

The Effect of Fillers

Clay (a hydrous filler) was found to flocculate pulp in the absence of alum, but calcium carbonate (a nonhydrous filler) had no effect. The presence of clay inhibited the dispersing action of alum, a greater amount of alum being required to bring about dispersion. This can be explained by the fact that the negatively-charged clay lowers the charge on the fiber which is positively charged by the alumina floc,

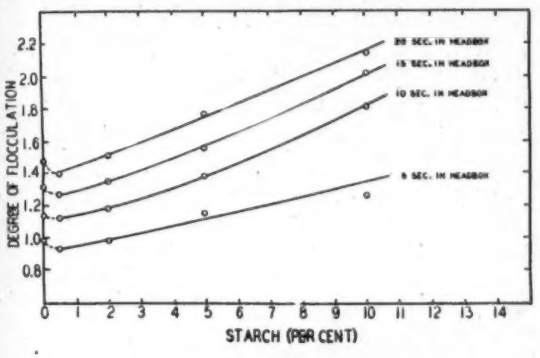

Fig. 8.
Effect of Starch on Degree of Flocculation of Handsheets

and a greater amount of alum is required to raise the charge so that the pulp will disperse.

The Effect of Starch

Starch flocculated the pulp fibers, even showing the effect in the absence of alum. The addition of starch to a pulp dispersed with alum brought about a marked flocculation which was similar to the Sveen glue effect, with the exception that it was not as marked and did not persist as long on circulation in the flocculation tester. Starch was found to be about

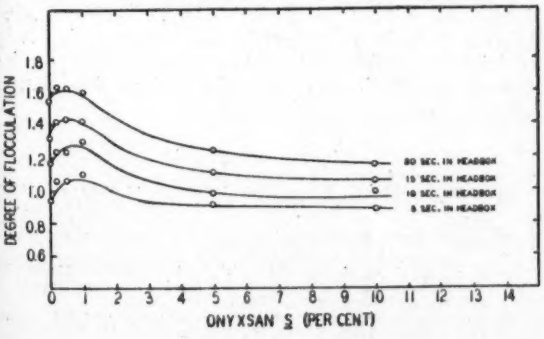

Fig. 9.
Effect on Onyxsan *S* on Degree of Flocculation of Handsheets

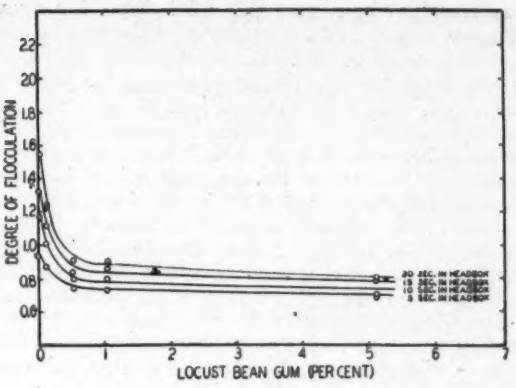

Fig. 10.
Effect of Locust-Bean Gum on Degree of Flocculation of Handsheets

as effective as the glue in clearing up white water in which clay and fiber were present, although greater percentages of starch were required. The results (Fig. 8) of handsheet studies showed that starch was less effective than the glue as a flocculating agent when added to handsheets in the presence of 5 per cent alum.

The Effect of Wetting Agents

The effects of wetting agents can be explained on the basis of their charge. Negatively-charged wetting agents (Duponol WA and Turkey red oil) in the presence of alum and air, flocculated pulp fibers and caused them to float out of suspension, but positively-charged wetting agents (Du Pont Product BC and Onyxsan *S*) had no such effect. The addition of positively-charged wetting agents to pulp suspensions which had been dispersed with alum enhanced the dispersion, while the negatively-charged wetting agents caused flocculation.

The effect of adding increasing amounts of Onyxsan *S* to a pulp was to cause marked flocculation at first (Fig. 9), but larger amounts brought about dispersion. This behavior, like that of alum, is explained by the fact that initial additions lower the charge on the fiber, enhancing flocculation, and subsequent dispersion is due to the greater positive charge conferred by the Onyxsan *S*.

The Effect of Locust Bean Gum, Deacetylated Karaya Gum, and Methylcellulose

Locust bean gum, a hydrophilic colloidal substance,

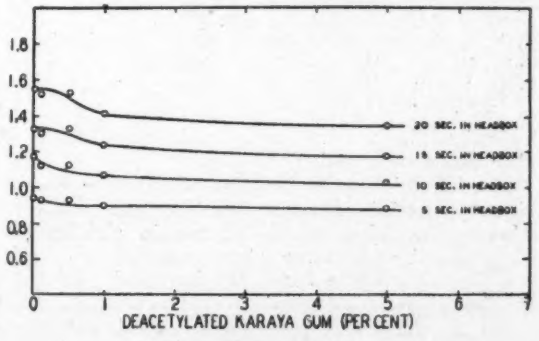

Fig. 11.
Effect of Deacetylated Karaya Gum on Degree of Flocculation of Handsheets

was found to be a very powerful dispersing agent (Fig. 10), much more effective than deacetylated karaya gum (Fig. 11). Its effect was evident even at low *p*H values and in the presence of 5 per cent alum, and, unlike deacetylated karaya gum, was not affected by agitation. The small amount of gum required to bring about the marked dispersing effect led to the conclusion that the mechanism by which the dispersion is effected must be due to changes involving the fibers rather than white water viscosity changes. The results of electrophoretic studies support the theory that hydration film is the controlling factor in the dispersion of pulp by locust bean gum.

Methylcellulose was found to have as strong a dispersing action as locust bean gum, and it is believed that, in this case also, dispersion is due to hydration film.

Dispersing Effects of Deflocculating Agents

A comparison (Table II) of the effects of the various deflocculating agents reveals that a concentration of between 0.1 and 0.5 per cent locust bean gum is as effective in dispersing pulp as a decrease in temperature from 25 deg. to 8 deg. C., as 1 per cent deacetylated karaya gum, as 25 per cent alum, or as 5 per cent Onyxsan *S*.

TABLE II.—COMPARISON OF THE DISPERSING EFFECTS OF THE VARIOUS DEFLOCCULATING AGENTS

Unbleached Sulphite—Time of standing, 10 seconds

Temperature deg. C	Alum %	Onyxsan *S* %	Deacetylated karaya gum %	Locust bean gum %	Degree of flocculation
8	0	0	0	0	0.91
25	0	0	0	0	1.17
25	0	0	0	0.1	1.01
25	0	0	0	0.5	0.80
25	0	0	1	0	1.06
25	0	5	0	0	0.98
25	25	0	0	0	0.93

These results indicate that, of all the substances investigated, locust bean gum and, possibly, methylcellulose appear to be the only ones which cause a really significant dispersing action. The amount of alum required to bring about the desired effect (by alum alone) is well beyond the quantity which could be used economically under the experimental conditions of this investigation.

Electrokinetic Potential Studies

A few exploratory experiments were carried out to demonstrate that the electrokinetic potential (associated with fiber charge) and hydration film could influence the flocculation characteristics of pulp. Since it is known that the stability of colloids is due to both charge and hydration film, the behavior of pulp fibers under conditions of known charge and hydration film properties should give an indication as to the validity of the assumption that charge and hydration film are important in the phenomenon of fiber flocculation and dispersion.

Martin and Gortner (*5*) found that the electrokinetic potential of cellulose in benzene was zero, whereas the value was —142 mv. in nitrobenzene. This value is quite large when compared with —5.8 mv. for the cellulose-water interface, and —19.9 mv. for the ethyl alcohol-cellulose interface.

On the basis of these facts, experiments were carried out to determine whether the flocculation behavior of pulp in these various liquids was connected in any way to the known electrokinetic potential values.

The pulp was first disintegrated in the standard British disintegrator using distilled water. The suspension was filtered to remove the water and then washed several times with 95 per cent ethyl alcohol. It was finally dispersed in ethyl alcohol at 0.01 per cent fiber consistency and allowed to stand overnight.

The suspension was then stirred vigorously and poured into a 2-liter graduate; at the same time, a 0.01 per cent pulp suspension in distilled water was also agitated and poured into a second 2-liter graduate, and the flocculation characteristics of the two suspensions were observed. The pulp suspension in the distilled water was observed to flocculate more than the pulp in the ethyl alcohol. Since it is known that alcohol dehydrates hydrophilic colloids, it would be safe to assume that the hydration film of the cellulose was removed by the alcohol. If the hydration film were the only stabilizing factor involved, one would expect the pulp to be poorly flocculated in the alcohol. However, the fact that the cellulose has an electrokinetic potential of —19.9 mv. in ethyl alcohol as compared with —5.8 mv. in distilled water can explain the greater dispersion in the alcohol.

In the next experiment the pulp was filtered from the alcohol suspension and the alcohol removed by washing several times with benzene. The pulp was then placed in 2 liters of benzene, upon which extremely large fiber flocs were observed to form. These flocs could not be separated into individual fibers, even when subjected to very violent agitation. When a glass rod was placed in the suspension and stirred so that there was a circulatory motion, the flocs would collect on the rod and in a short time practically all the fibers would be on the rod. The flocs would form long streamers, which were subjected to quite a strong shearing stress due to the motion of the liquid, but they would nevertheless cling together showing that very strong forces of attraction were holding the fibers in the form of flocs.

When this experiment was repeated with nitrobenzene in place of benzene, the fibers dispersed readily and remained dispersed for a long time. Only a slight amount of stirring was needed to redisperse the flocs which formed after the pulp had stood sufficiently long for the fibers to flocculate.

The results of these experiments prove that in the case of pulp with zero electrokinetic potential and no hydration film (the pulp in benzene) there is no stabilizing influence, and extreme flocculation takes place. The pulp fibers in nitrobenzene have no hydration film, but the fact that dispersion takes place demonstrates that the charge on the fiber can maintain the pulp in a dispersed condition provided it is sufficiently high. This observation supports the assumptions made to explain the various flocculation behaviors previously discussed.

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(3) Davis, Myrl N., Roehr, Walter W., and Malmstrom, Homer E., *Tech. Assoc. Papers* 18:386-391 (June, 1935); *Paper Trade J.* 101, no. 4:31-36 (July 25, 1935).

(4) Loddengaard, P. M., *Tech. Assoc. Papers* 20:291-296 (June, 1937); *Paper Trade J.* 105, no. 9:37-42 (Aug. 26, 1937).

(5) Martin, William McKinley, and Gortner, Ross Aiken, *J. Phys. Chem.* 34:1509-1539 (1930).

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JUNE 8, 1940

SUMMARY

Cigarette paper.....8 cs.
Wall paper .....1 pkge.
Newsprint .....7,010 rolls
Note paper and envelopes.....1 cs.
Miscellaneous paper .....5 bls., 8 cs.

CIGARETTE PAPER

Braunstein Freres, Inc., ——, Havre, 8 cs.

WALL PAPER

C. F. Lavalle, *Maret*, Antwerp, 1 pkge.

NEWSPRINT

——, ——, Liverpool, N.S., 6,043 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 319 rolls.
International Paper Co., ——, Gatineau, 292 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 356 rolls.

NOTE PAPER AND ENVELOPES

Cartier, Inc., ——, Havre, 1 cs.

MISCELLANEOUS PAPER

Steiner Paper Corp., ——, Havre, 8 cs.
N. Zucker, ——, Havre, 5 bls.

RAGS, BAGGINGS, ETC.

Chase National Bank, ——, Havre, 125 lbs. waste bagging.
Castle & Overton, Inc., *Montevideo*, Buenos Aires, 56 bls. hosieries, 23 bls. old canvas, 6 bls. hemp threads, 5 bls. new cuttings.
Commercial Bank of Greece, *Mangalia*, Piraeus, 39 bls. old white cotton rags, 325 bls. old baggings.
A. Hurst & Co., ——, Shanghai, 50 bls. cotton waste.
W. Intner, ——, Shanghai, 92 bls. cotton waste.
Brandwein Mazur, ——, Shanghai, 162 bls. cotton waste.
A. W. Fenton, Inc., *Maret*, Rotterdam, 36 bls. rags.

CASEIN

——, *Mormacyork*, Buenos Aires, 200 bags, 12,000 kilos .

WOOD PULP

Irving Trust Co., *Mangalia*, Constanza, 1,000 bls. prime unbleached sulphite, 200 tons.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 8, 1940

Castle & Overton, Inc., *Montevideo*, Buenos Aires, 62 bls. old house cloths, 79 bls. old white cottons.

LOS ANGELES IMPORTS

WEEK ENDING JUNE 8, 1940

——, *Kingsley*, Powell River, 1,586 pkgs. newsprint.

New Literature

Synchronous motors are described in Bulletin B-6033, just issued by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. This publication presents the larger coupled and engine type motors. It includes details of construction and illustrations of various installations and applications. Starting equipment, including metal-clad and cubicle switchgear are also included.

Micromax and other pyrometers, are described in Broadside N-33, just issued by the Leeds & Northrup Company, 4934 Stenton avenue, Philadelphia, Pa. The L&N micromax recorders, manual indicators and other controlling and checking apparatus are included. There is also a concise discussion of the thermocouples, rayotubes, thermohms and optical-type temperature detectors.

A resin base floor dye, known as Colorflex is described in a new folder issued by the Flexrock Company, 2300 Manning street, Philadelphia, Pa. This preparation is not a paint, but made of colored resin, bakelite, penetrating oil and solvent, for the protection of concrete and preservation of wood floors. A bulletin on Flexrock describes this flexible concrete material and its application for resurfacing old wood floors.

Controls for operating valves from 3 inches to 96 inches in diameter, are described in a new 66-page catalogue just issued by the Philadelphia Gear Works, Erie avenue and G street, Philadelphia, Pa. Facts and figures of the company's line of controls for valves and for many other purposes where remote control is desired are presented.

Degasification by means of the Cochrane Decarbonator, is the subject of Publication 2975, issued by the Cochrane Corporation, 17th street and Allegheny avenue, Philadelphia, Pa. The Decarbonator is currently used to remove carbon dioxide from the effluent of carbonaceous hydrogen zeolite softeners and from water supplies treated with acid. The Decarbonator, made largely of cypress or redwood, is equipped with a rotary blower and fitted with corrosion resistant metals.

Bowmall & Co. Receive Pulp

Wood pulp shipments are still being received from Rumania according to Bowmall & Co., 250 Park avenue, New York, which concern reports that it received for its account 200 tons of unbleached sulphite pulp on June 3 on the S. S. Mangalia.

Dr. Smith Goes with Duraloy Co.

Dr. Howard A. Smith, until recently research metallurgist with the Rustless Iron and Steel Company, Baltimore, Md., and previously in charge of stainless steel development in the laboratories of Republic Steel Company at Canton, Ohio, has been made chief metallurgist of the Duraloy Company, Scottdale, Pa.

New Hancock Valve

The Hancock Valve Division of Manning, Maxwell & Moore, Inc., Bridgeport, Conn., announces a now 600-pound standard steel valve. This new valve is called the Hancock Duravalve Junior. The main feature of this valve is the seat, which is Stellite welded integral to the body.

The makers claim this integral seat construction has proven superior to any other based on over three years' experience in 1500-pound power plant work. This integral seat construction definitely eliminates

HANCOCK DURAVALVE JUNIOR

any chance of leakage between seat ring and body as there are no threads to leak. The valve disc is also heavily Stellited to resist wire-drawing and wear.

The makers state that this new valve weighs from ⅓ to ½ less than comparable conventional design valves. This new valve has a body and bonnet of Carbon Molybdenum steel giving it a temperature rating of 950 deg. at 600 pounds steam pressure. The Hancock Duravalve Junior is available in sizes ¼ inch to 1 inch inclusive, in the globe type, with either screwed or socket welding ends. A letter to the manufacturer will bring a new descriptive bulletin.

Argentina Pulp Imports

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 12, 1940—Argentina is dependent upon outside sources for practically all of the pulp consumed in the domestic industry. The exceptions are pulp manufactured from straw in the plant of Celulosa Argentina, Sociedad Anonima, Juan Ortiz, F.C.S.F., and mechanical pulp manufactured by the same company at their plant in Zarate. Domestic production of chemical pulp increased from 20,700 metric tons in 1938 to 50,000 metric tons in 1939. Similarly the production of mechanical pulp increased slightly amounting during the latter year to 41,000 metric tons.

Imports of wood pulp are not classified by types. For the year 1939, however, the Argentine Statistical Office has for the first time separated wood pulp imported for the manufacture of paper from that imported for the manufacture of artificial silk yarn and other purposes. Total imports were 12½ per cent greater by volume than in 1938.

National Letter Writing Week, 1940

The promotion of letter writing in 1938 and 1939 through National Letter Writing Week campaigns in each of these years has been successful. Again some twenty manufacturers of stationery are sponsoring National Letter Writing Week, the dates for which will be October 6 to 12, 1940. In advance of these dates these manufacturers will supply to retailers of stationery materials useable in store windows and show cases to bring the letter writing idea to the public. Posters by the thousands will be distributed with the slogan, "Make Folks Happy—Write Today." Plans are under way for broad publicity to support the dealer's own campaign work.

Prizes for window displays will be given with an increase in the number and amount over those given last year.

The Paper Stationery and Tablet Manufacturers Association, Inc., 527 Fifth avenue, New York, N. Y., is the campaign office. The following manufacturers are sponsors of the campaign:

American Papeterie Company, Albany, N. Y. J. C. Blair Company, Huntingdon, Pa. Eaton Paper Corporation, Pittsfield, Mass. George W. Fox Paper Company, Philadelphia, Penn. Kalamazoo Stationery Company, Kalamazoo, Mich. Lakeside Central Company, Chicago, Ill. and Davenport, Iowa. Mid West Paper and Envelope Company, Marion, Indiana. Montag Brothers, Inc., Atlanta, Ga. Novelart Manufacturing Company, Long Island, N. Y. Puritan Stationery Company, Philadelphia, Pa. Sangamon Company, Taylorville, Ill. Southern Central Company, Memphis, Tenn. Springfield Photomount Company, Holyoke, Mass. United States Envelope Company, P. P. Kellogg & Co. Div., Springfield, Mass. Marcus Ward, Inc., Albany, N. Y. Wesley & Winter, Inc., Linden, N. J. Western Tablet and Stationery Company, St. Joseph, Mo. White & Wykoff Manufacturing Company, Holyoke, Mass. Arthur E. Wilson & Co., New York, N. Y.

P. C. Wesco Made Sales Manager

At a recent meeting of the board of directors Paul C. Wesco was appointed sales manager of the Fox River Paper Corporation, Appleton, Wis., manufacturers of rag-content bonds, ledgers, thin papers and specialties.

Mr. Wesco, who has had nearly twenty-five years in the sales field, has been directly connected with the paper industry for nineteen years. In 1933 he resigned as sales manager of the Tuttle Press to join the Fox River organization, thus entering the fine paper field.

Mr. Wesco plans to continue his close field contact with the trade, in addition to assuming the new responsibilities which his position entails.

Wm. B. Darling To Be Sales Manager

The Wardlow-Thomas Paper Company of Middletown, Ohio, announces an addition to its personnel in the appointment of Wm. B. Darling, formerly of the Munising Paper company, as sales manager.

The company manufactures shot shell tube paper, flour sack, and many other paper and board specialties of exceptional strength, having a hope, jute, or rag content.

Volclay
PUREST WYOMING

BENTONITE

FOR PAPER MANUFACTURERS . . .

Supplied in the usual commercial powder forms

Also in exclusive grades as:

BC Volclay—Impalpable grit-free dust . . . the finest commercial bentonite available.

KWK Volclay No. 33—Fine Pellets . . . disperses in water much quicker than powder but yields the same smooth gels and suspensions.

For Twelve Years the Top Quality Colloidal Bentonite

American Colloid Company
Three plants
Main Office—363 W. Superior St., Chicago, Illinois

"NON-USERS ARE THE LOSERS"

FINISH AND SPEED

TENAX FELTS

"men and minds meet"

Many Superintendents will carry problems to the Convention for discussion with friends — one of which will be *operation of felts.*

By specifying TENAX FELTS you have complete assurance of uniformity, constant helpfulness in producing perfect paper, ability to get rid of water at the presses, and long-lasting usefulness.

If not already using TENAX FELTS, a review of their favorable record will prove it advisable to start now, in this, THE FIFTIETH YEAR OF PROGRESS OF TENAX FELTS.

"Non-Users Are The Losers"

LOCKPORT FELT COMPANY
NEWFANE, N. Y.—U. S. A.

New York Paper and Pulp Market Review

Third Quarter Pulp Prices Effective July 1 Expected To Show Substantial Advances On Sulphite, Sulphate and Soda Pulp With Unbleached Sulphite Pulp Scarce—Waste Paper Market Strong With Some Prices.

Office of the PAPER TRADE JOURNAL,
Wednesday, June 12, 1940.

The wholesale paper market is reported strong with the trend in sales upward, under the influence of a broad demand for practically all kinds of paper and paper products. Reports received from many manufacturers' representatives, jobbers, and general paper merchants for the current week indicate that the volume of trade is about 10 per cent above that of this date last year.

The index of general business activity for the week ended June 1 rose to 96.9 per cent, compared with 86.0 per cent for the same period in 1939.

Paper production of 243 mills for the week ended June 1 was estimated at 90.8 per cent, compared with 70.9 per cent for 1939, with 62.5 per cent for 1938, with 85.2 per cent for 1937, and with 81.7 per cent for the corresponding week in 1936.

Paper board production for the week ended June 1 was 75.0 per cent, compared with 57.0 per cent for 1939, with 48.0 per cent for 1938, with 76.0 per cent for 1937, and with 65.0 per cent for the corresponding week in 1936.

The trend in the wholesale paper market is upward for all paper and paper products and under an increasing domestic and export demand, prices are very firm and moderate advances are in prospect. The average price advances in sulphite papers reported to date by many mills is $6.50 per ton. The smallest advances are in book paper, while the largest advances have been reported in some of the offset grades. Spot prices in most instances, are higher, with a relatively small amount of business placed at a premium or around $5 per ton higher than the contract prices quoted for the third quarter of this year. Higher paper prices are, of course, attributed to the general world-wide demand on this country and Canada, due to the shifting of source of supply brought about by the European conflict, to a rising domestic consumer demand, and to the increasing scarcity of pulp. All these underlying factors, with the suspension of pulp shipments from the Scandinavian countries, have created a very strong market situation in paper and pulp.

Mechanical Pulp

No important change in the market situation of mechanical pulp has been reported this week. Although higher groundwood pulp prices are expected in the trade, no announcement of any advance from prevailing market quotations, at from $40 to $42 per ton for the third quarter of this year, have been received to date.

Chemical Pulp

No change in contract prices on domestic and Canadian chemical wood pulp will, of course, occur until the third quarter prices go into effect on July 1. These quotations, at which some sales of domestic and Canadian pulp are now being based, and which accurately reflect the pulp market at this date, are as follows: bleached sulphite, 3.07½ to 4.50; easy bleaching sulphite, 2.75 to 3.75; strong unbleached sulphite, 2.75 to 3.75; bleached kraft, 3.37½ to 4.25; light and strong kraft, 2.75 to 3.75; and bleached soda pulp, 2.90 to 3.30. The higher or maximum prices given are comparable to minimum spot prices.

Rags

Mill buying of the higher grades or rags continues moderately good. Prices are firm and no important changes on any grade of new and old rags have been reported to date.

Old Rope and Bagging

The old rope market continues strong, with the trend reported upward. No important price changes have been reported this week. The old bagging market is firm and prices continue unchanged at prevailing market quotations.

Old Waste Paper

The old waste paper market is reported very strong this week. All prices are firm with important price advances in several grades. White ledger stock has advanced at from 2.05 to 2.15 and colored ledger stock is currently quoted at from 1.65 to 1.70. Strictly folded news is up and currently quoted at from .52½ to .57½. A sharp advance is reported in corrugated, now quoted at from .72½ to .75. No. 1 mixed paper has advanced this week and is currently quoted at from .42½ to .45.

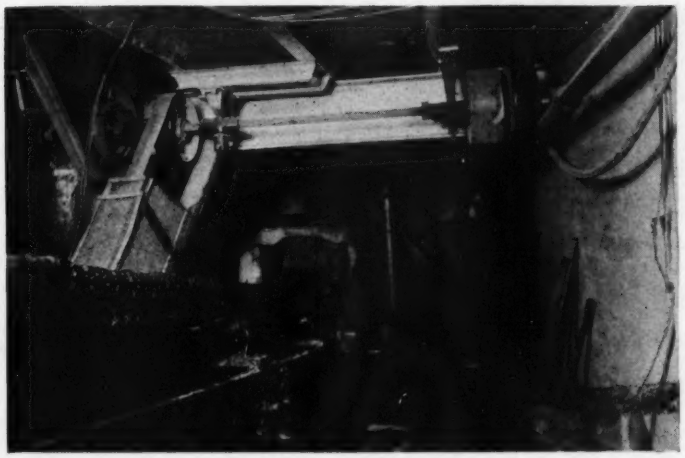
Twine

The twine market is firm. Some advances have been reported but the average representative mill quotations continue unchanged, with higher prices expected on many hard and soft fiber twines.

Cambridge Electron-Ray *p*H Meter

Folder 910E describes the Cambridge Electron-Ray *p*H Meter which is sensitive to .005 *p*H. It reproduces readings to .01 *p*H and incorporates in place of the conventional null-point indicator, an Electron-Ray tube which is practically immune to damage from mismanipulation by the operator. Its glass electrode enables universal application. Scaled in both *p*H and Millivolts, the instrument provides a high degree of accuracy for the determination of *p*H values as well as oxidation-reduction potentials without applying a conversion factor. Complete in an 8½ x 10 x 17½ inch case, this conveniently portable meter operates directly from the 110-125 volt supply line. A copy of this folder may be had by applying to the Cambridge Instrument Company, Inc., 3732 Grand Central Terminal, New York.

Kraft Mills Should Investigate the Use of the Nekoosa Screenings Press



Here you see kraft screenings as pressed by the Nekoosa Screenings Press in a large mill. This material can be profitably recooked into acceptable pulp. If your mill is now making any other disposition of screenings, a Nekoosa Screenings Press installation will pay for itself in a very short time depending on the amount of screenings to be handled.

The economical and efficient operation of this unit make it a money saver in any kraft mill.

Nekoosa Foundry & Machine Works Inc.

Nekoosa, Wis.

Bark Presses
Chip Cutters
Flat Screens
Agitators
Wood Peelers
Sulphite Mill Fittings
Special Equipment
Rolls
Deckers
Wet Machines
Cylinder Moulds
Wood Splitters
Water Marking Equipment

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All kinds and styles of Felts for all kinds and styles of Papers.

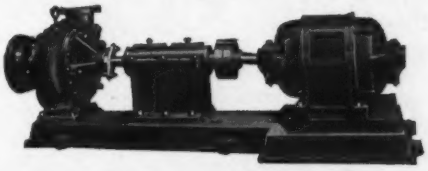
Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY

CANTON, MASS.

Woolen manufacturers since 1856

STOCK PUMPS *by* FREDERICK



Specifically designed for each operating condition

The FREDERICK stock pump was designed in collaboration with paper mill engineers and paper mill operators. Operating requirements as well as scientific design were carefully considered. We learned that on the lower consistencies of stock certain clearances could be maintained in order to secure high efficiencies. We learned, also, that on heavy stock different design was required and that it was often necessary to sacrifice some efficiency in order to provide a unit that would successfully and continuously handle the high consistencies without clogging and without shutdown. Pumping is the very heart action of a paper mill and continuous, trouble-free operation of the pumping equipment is absolutely necessary to keep manufacturing costs low.

Each FREDERICK stock pump is a separately engineered unit. Each pump is built especially for the operating conditions to be met, taking into consideration the nature of the stock to be handled, the consistency, the piping layout and all the other items that must be carefully considered in order to furnish the unit best suited for the exact operating conditions specified.

When you buy a FREDERICK pump you purchase a unit that is GUARANTEED to meet the operating conditions for which it is sold.

THE FREDERICK IRON & STEEL CO. • FREDERICK, MD.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, June 12, 1940.

BLANC FIXE—Prices on blanc fixe are firm and unchanged at prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, in bags, f.o.b., works.

BLEACHING POWDER—Quotations on bleaching powder are firm. Demand steady for the week. Prices unchanged. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Prices on casein are unchanged for the week. Standard domestic casein, 20-30 mesh, is currently quoted at from 13 to 14 cents per pound; 80-100 mesh, at from 13½ to 14½ cents per pound. All prices in bags, car lots. Argentina casein is currently quoted at 12½ cents per pound; French casein at 15 cents per pound is nominal.

CAUSTIC SODA—Quotations on caustic soda are firm and are reported unchanged at prevailing market levels. Demand continues moderate. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay are firm and continue unchanged at prevailing market quotations. Domestic filler clay is currently quoted at from $7 to $15 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is currently offered at from $13 to $25 per long ton, ship side.

CHLORINE—Quotations on chlorine are firm and unchanged at prevailing market levels. Demand reported moderate for the week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported fairly firm for the week with prices lower. "G" gum rosin is currently quoted at $4.17½ per 280 pounds, gross weight, in barrels, Savannah. "FF" wood rosin is offered at from $4.14 to $4.17½ per 280 pounds, gross weight, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.51 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Quotations on salt cake are firm and nominal and continue to conform to prevailing market levels. Domestic salt cake is currently quoted at $17 per ton, in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. Imported salt cake, currently quoted at $20 per ton, is nominal.

SODA ASH—Prices on soda ash are firm and continue unchanged. Demand reported moderate. Prices on soda ash in car lots, per 100 pounds, are as follows; in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Quotations on corn starch are reported higher this week. Pearl is currently quoted at $2.80 per 100 pounds; powdered starch at $2.90 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Demand reported good for this week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds. All prices in bags, car lots, f.o.b., works.

SULPHUR—Quotations on sulphur are firm and continue to conform to prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Prices on talc are firm and continue unchanged at prevailing market quotations. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $23 to $45 per ton.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$5.75
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.37½	"	4.62½
Standard Wrapping	4.25	"	—
Tissues—Per Ream—Carlots			
White No. 1	.95	"	—
White No. 1 M. G.	.92½	"	—
White No. 1½	.77½	"	—
White No. 2	.70	"	—
Anti-Tarnish M. G.	.80	"	
Colored	.87½	"	
Kraft	.85	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.50	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.00	"	—
Bleached, Jr.	3.50	"	—
Manila—per cwt.—C. l. l. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	35.00	@	40.00
Chip	35.00	"	40.00
Sgl. Mla. Ll. Chip	55.00	"	57.00
White Pat. Coated	67.00	"	70.00
Kraft Liners	55.00	"	—
Binders Boards	73.00	"	80.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @	$47.25
100% Rag	31.05 "	36.50	32.20 "	37.75
85% Rag	.... "	....	29.90 "	35.00
75% Rag	23.60 "	27.75	24.75 "	29.00
65% Rag	.... "	....	21.65 "	26.25
50% Rag	17.55 "	21.50	18.70 "	22.75
25% Rag	14.65 "	17.75	15.80 "	19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.95 @	$11.00	$10.10 @	$12.25
No. 2	8.05 "	9.75	9.25 "	11.25
No. 3	7.60 "	9.25	8.50 "	10.75
No. 4	7.30 "	9.00	8.50 "	10.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	8.35	"	9.50
No. 2 Offset	7.70	"	9.00
A Grade E. F.	7.50	"	8.75
A Grade S. & S. C.	7.75	"	9.00
B Grade E. F.	6.95	"	8.00
B Grade S. & S. C.	7.20	"	8.25
C Grade E. F.	6.65	"	7.75
C Grade S. & S. C.	6.90	"	8.00
D Grade E. F.	6.40	"	7.50
D Grade S. & S. C.	6.65	"	7.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	Nominal		
Dry	Nominal		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	42.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.07½	@	4.50
Prime Qualities—			
Easy-Bleaching Sulphite	2.75	"	3.75
Strong Unbleached Sulphite	2.75	"	3.75
(On Dock, Atlantic Ports)			
Kraft Bleached	3.37½	"	4.25
Kraft Light & Strong	2.75	"	3.75
Kraft No. 1	2.50	"	3.50
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	2.75	"	3.25
(Delivered)			
Soda Bleached	2.90	"	3.30

Add 60 cents per short ton, dock charges for Albanay; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	7.00	@	7.25
Silesias No. 1	4.25	"	4.75
New Unbleached	6.75	"	7.00
Blue Overall	4.50	"	4.75
Fancy	3.25	"	3.50
Washables	2.00	"	2.15
Mixed Khaki Cuttings	2.75	"	3.00
O. D. Khaki Cuttings	3.15	"	3.35

Old Rags

White, No. 1—			
Repacked	3.25	"	3.50
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	2.00	"	2.25
Miscellaneous	1.75	"	1.90
Roofing Rags—			
No. 1	1.10	"	1.15
No. 2	.82½	"	.87½
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxford	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

HIGHEST QUALITY CLAYS

LUMP and POWDERED } IMPORTED

POSTON PAPER MAKERS IMPORTING CO. INC. MILLTOWN, PENNSYLVANIA, U.S.A.

DOMESTIC { CRUDE CRUSHED, AIR FLOATED, WATER WASHED

PRECIPITATED CALCIUM CARBONATE

INCREASE THE LIFE OF PAPER MAKING EQUIPMENT

by using MONEL

. . resistant to corrosion by acid and alkaline stocks and white waters, souring solutions and caustics

. . completely free from dezincification

. . offering high strength, toughness and resistance to wear and abuse

. . readily soldered or welded, and easy to fabricate by standard methods.

MONEL — 2/3 NICKEL + 1/3 COPPER

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

SCREENS of Perforated Metal

The Harrington & King PERFORATING CO.

5652 Fillmore St., Chicago, Ill. 114 Liberty St., New York, N.Y.

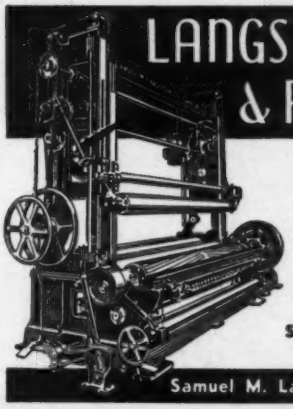
WATERBURY FELTS

Are Made By

H. WATERBURY & SONS CO.

ORISKANY, NEW YORK

LANGSTON SLITTERS & ROLL WINDERS



stand up under heavy service and deliver clean cut rolls of uniform density

SHEAR CUT — CLEAN CUT

Samuel M. Langston Company, Camden, N. J.

CLINTON

STARCHES

SPECIAL GRADES FOR BEATER AND TUB SIZING

QUALITY SERVICE

CLINTON COMPANY
CLINTON, IOWA

PAPER MILL MACHINERY

MIDWEST BEATERS — FULTON SYSTEMS

For Greater Profits

MIDWEST-PULPERS

Write For Details Today!

THE MIDWEST-FULTON MACHINE CO.
Dayton, Ohio

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	"	4.75
No. 2 White Cotton.	3.25	"	3.75
No. 3 White Cotton.	2.50	"	3.00
No. 4 White Cotton.	1.90	"	2.20
Extra Light Prints..	2.00	"	2.40
Ord. Light Prints...	1.75	"	2.15
Med. Light Prints...	1.55	"	1.95
Dutch Blue Cottons.	2.25	"	2.50
French Blue Linens..	3.00	"	—
Checks and Blues...	2.00	"	—
Linsey Garments....	1.90	"	2.00
Dark Cottons.....	1.50	"	1.60
Old Shopperies.....	1.30	"	1.45
New Shopperies.....	1.45	"	1.50
French Blues.....	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.75	@	3.00
Domestic	2.50	"	2.75
Wool Tares, light...	2.00	"	2.25
Wool Tares, heavy..	2.12½	"	2.25
Bright Bagging.....	2.25	"	2.50
Manila Rope—			
Foreign	4.25	"	4.50
Domestic	3.75	"	4.00
Jute Threads.....	2.62½	"	2.75
Sisal Strings.....	2.10	"	2.35
Mixed Strings.....	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1....	2.25	@	2.50
Soft White No. 1..	1.80	"	1.90
Soft White Extra..	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag....	1.00	"	1.10
Solid Flat Book...	1.05	"	1.10
Crumbled No. 1..	.70	"	.75
Ledger White Stock.	2.05	"	2.15
Ledger Stock Colored	1.65	"	1.70
Manila—			
New Env. Cut....	1.70	"	1.80
New Cuttings.....	1.30	"	1.40
Old Kraft Machine Compressed bales..	1.75	"	1.85
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue.	.70	"	.75
Strictly Folded....	.52½	"	.57½
Corrugated	.72½	"	.75
No. 1 Mixed Paper..	.42½	"	.45

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp.....	.19½	"	—
Fine Polished—			
Fine India.....	.24	"	—
Unpolished—			
Box	.15	"	—
Paper Makers.....	.15¾	"	—
Tube Rope.....	.17	"	—
Wall Paper.....	.16	"	—
Wrapping	.18¾	"	—
Soft Fiber Rope...	.16¾	"	—
Cotton	.21½	"	—

(Hard Fiber)

Medium Java.....	.20	"	—
Mex. Sisal.....	.17	"	—
Manila	.24¾	"	—

Domestic	2.25	"	2.50
Sisal Rope.....	2.25	"	2.50
Mixed Rope.....	.85	"	1.00
Transmission Rope—			
Foreign	3.50	"	3.75
Domestic	2.50	"	3.00
Soft Jute Rope.....	3.00	"	3.25
Manila Rope—			
Foreign	4.85	"	5.10
Jute Carpet Threads.	1.50	"	1.75
Gunny Bagging—			
Foreign	2.75	"	2.85
Domestic	2.50	"	3.00
Bleachery Burlap....	4.00	"	3.25
Scrap Burlap—			
Foreign	2.25	"	2.40
Domestic	2.50	"	—
Scrap Sisal.....	2.25	"	2.50
Scrap Sisal for Shredding	2.30	"	2.65
Wool Tares, Heavy..	2.40	"	2.50
New Burlap Cuttings	3.75	"	4.00
Aust. Wool Pouches.	3.00	"	3.25
Heavy baling bagging	2.60	"	2.90
Paper Mill Bagging..	1.75	"	2.00
No. 2 Bagging.....	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints.	—	@	.03
Fancy Percales....	.04	"	.04¼
New White No. 1.	—	"	.07½
New Light Flannelettes	.05	"	.05¼
Silesias No. 1	.05	"	—
New Black Silesias..	3.20	"	3.25
Soft Unbleached...	.07	"	.07½
Blue Cheviots.....	.05	"	.05½
Fancy	.02	"	.02½
Washable	.02	"	.02½
Cottons—According to Grades—			
Blue Overalls.....	.04¾	"	.05
New Black, Soft..	.03	"	.03¼
Khaki Cuttings.....	.03	"	—
O. D. Khaki.....	.03	"	.03½
Corduroy	.02¾	"	.03
New Canvas.....	.06¾	"	.07¼
B. V. D. Cuttings...	.07	"	.07½

Domestic Rags (Old)

(F. o.b. Boston)

White No. 1—			
Repacked	2.75	"	3.75
Miscellaneous	2.40	"	2.60
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.2[illegible]
Twos and Blues.....	1.50	"	2.00
Old Blue Overalls ..	1.60	"	2.00
Thirds and Blues—			
Repacked	—	"	1.25
Miscellaneous	—	"	1.00
Black Stockings.....	3.50	"	4.00
Roofing Stock—			
No. 1.....	1.00	"	1.25
No. 2.....	—	"	1.10
No. 3.....	—	"	.90

Foreign Rags

(F. o. b. Boston)

Canvas	.04¾	@	—
Dark Cottons.....	(nominal)		
Dutch Blues.....	(nominal)		
New Checks and Blues	(nominal)		
Old Fustians.....	(nominal)		
Old Linsey Garments.	(nominal)		
New Silesias.....	(nominal)		

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

Shirt Cuttings—			
New White No. 1.	.07¼	@	.07½
New White No. 2.	.04	"	.04½
Light Silesias.....	—	"	.04½
Silesias, No. 1....	—	"	.04½
Black Silesias, soft	—	"	.03¾
New Unbleached..	.05½	"	.06
Washable, No. 1..	—	"	.04
Blue Overall.....	.04½	"	.05
Cottons—According to grades—			
Washable No. 2...	—	"	.01¾
New Blue	—	"	.01¾
Fancy Percales....	—	"	.03
New Black Soft...	—	"	.04
New Light Seconds	.04½	"	.05
New Dark Seconds	—	"	1.55
Khaki Cuttings—			
No. 1 O. D.....	.03½	"	.03¾
No. 2 Mixed.....	.02½		.02¾
Corduroy	—	"	.03
New Canvas.....	.05½	"	.06
New Black Mixed.	—	"	.03

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.75
Miscellaneous	2.50	"	2.75
Thirds and Blues—			
Miscellaneous	1.55	"	1.65
Repacked	1.75	"	2.00
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1....Nominal			
Domestic No. 1...	—	"	.90
Domestic No. 2...	—	"	.80
Roofing Bagging..	—	"	.70

Bagging

(f.o.b. Phila.)

Gunny, No. 1—			
Foreign .....Nominal			
Domestic	2.25	@	2.75
Manila Rope.....	—	"	4.50
Sisal Rope.....	1.75	"	2.00
Mixed Rope.....	.75	"	1.00
Scrap—			
No. 1.....	2.50	"	2.75
No. 2.....	1.10	"	1.15
Wool Tares, heavy..	3.50	"	3.70
No. 1 New Light Burlap	3.00	"	3.50
New Burlap Cuttings	2.00	"	2.25

Old Papers

(f.o b. Phila.)

Shavings—			
No. 1 Hard White	2.50	@	2.55
No. 2 Hard White	2.10	"	2.15
No. 1 Soft White	1.85	"	1.90
No. 2 Soft White	1.60	"	1.75
No. 1 Mixed.....	.90	"	1.00
Solid Ledger Stock..	1.75	"	1.80
Ledger Stock, white.	1.85	"	1.90
Ledger Stock, colored	1.30	"	1.35
No. 1 Books, heavy..	1.10	"	1.15
Manila Cuttings.....	1.90	"	1.95
Print Manila.....	.65	"	.70
Container Manila....	.55	"	.60
Kraft Paper.....	1.70	"	1.75
No. 1 Mixed Paper..	.40	"	.45
Straw Board Chip...	.40	"	.45
Binders Board Chip..	.40	"	.45
Corrugated Board....	.65	"	.70
Overissue News.....	.75	"	.80
Old Newspapers.....	.55	"	.60

BOSTON

Old Papers

(f.o.b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.15
No. 1 Soft White	2.00	"	2.25
No. 2 Mixed.....	.75	"	.80
Solid Ledger Books..	1.50	"	1.75
Overissue Ledger Stock	1.75	"	2.00
Mixed Ledgers.....	.85	"	.90
No. 1 Books, heavy..	1.00	"	1.10
No. 1 Books, light..	.65	"	.75
Crumpled Stitchless Book Stock	[illegible]	"	[illegible]
Manila Env. Cuttings	1.85	"	2.00
Manila Envelope Cuttings, extra quality	2.35	"	2.60
White Blank News..	1.40	@	1.50
No. 1 Kraft.....	1.40	@	1.50
Extra No. 1 Kraft...	1.60	"	1.90
Mixed Papers.....	.22½	"	.25
Print Manila.....	.50	"	.55
Container Manila...	.60	"	.70
Old Newspapers.....	.45	"	.50
Paper Wool Strings..	.90	"	1.10
Overissue News.....	1.00	"	1.10
Box Board Chips....	.40	"	.45
Corrugated Boxes....	.50	"	.55
Kraft corrugated boxes	1.20	"	1.40
New Kraft Cuttings.	2.00	"	2.25
Screening Wrappers	.60	"	.70

Bagging

(f.o.b.Boston)

Gunny Bagging—			
Foreign .....(nominal)			

CHICAGO

Waste Paper

(f.o.b. Chicago)

Shavings—			
No. 1 White Envelope cuttings..	3.00	@	—
No. 1 Hard White	2.35	"	2.50
No. 1 Soft White.	1.85	"	1.95
Ledger and Writings	.85	"	.95
Solid Books.....	.95	"	1.05
Blanks	1.50	"	1.60
Krafts	1.15	"	1.35
New Kraft Cuts.....	1.40	"	1.55
Overissue News.....	.90	"	1.10
Old Newspapers—			
No. 1 Folded News	.65	"	.75
No. 1 Mixed Paper	.40	"	.55
Roofing Stocks—			
No. 1.....	.95	@	1.00
No. 2.....	.85	"	.90

INSTITUTE AWARDS DEGREES

(Continued from page 7)

block, but added that their value as citizens is significant beyond "growth and wealth."

"They have been foremost in leading this city in the artistic sense. Though they are not the exclusive promoters, and many others deserve credit, in many cases accomplishment of civic purposes would have been impossible without them," he said. He credited the two with a leading part in bringing about the clearing of buildings from the river banks, the extension of the parks and their improvement, construction of Lincoln High School and the athletic field, founding of Witter Vocational School, furtherance of the public library, purchase of the Boy Scout camp at Sunset Lake and the establishment of two golf courses.

Coast Mills Grant Increase

FORT EDWARD, N. Y., June 10, 1940—Announcement is made here by John P. Burke, president of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, that a general increase in pay has been granted by thirty-four paper mills on the Pacific Coast to employees following a conference with mill representatives at Portland, Ore. The increase calls for an increase of two and one-half cents an hour to employees connected with the union. A vacation of a week with pay also was granted by the mills. Mr. Burke traveled part of the way by airplane.